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Assessing Predictors of HIV infection among Out-of-school Youths in Rural and Urban Areas of North Central Nigeria

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Abuja Nigeria, 30/04/2014

Place, Date

Signature PhD Student

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Contents

Abstract:

Background:

Out of school youths (OOSY) are often neglected in HIV prevention efforts, and little is known about their HIV predictors. Previous studies have shown that they engage in risky sexual behaviors. Unlike in-school youths that are reached with formal HIV education programs, limited strategies exist for reaching OOSY. This study evaluated their HIV predictors.

Methods

A cross-sectional study involving 1600 OOSY in rural and urban areas of North-Central Nigeria selected using multi-stage sampling from November2013–January2014. Interview-administered questionnaires were used, and HIV testing was done. Multiple logistic regression models were selected using Akaike and Bayesian information criteria, and receiver operating characteristic curve. The selected models were evaluated using model specification, multicollinearity check, Hosmer-Lemeshow goodness-of-fit and cross-validation. The strength of predictors was assessed using standardized regression-coefficient.

Results:

There were 769(48.1%) in urban area and 831(51.9%) in rural area. The mean age was 20.6±2.7years. Female participants were 577(36.1%). Mean age at sexual debut was 16.2±2.8years; condom use during the last sex was 623(38.9%) and condom use with female sex workers (FSW) was 136(8.5%). Participants that engaged in casual partner were 212(13.0%); oral sex were 388(24.3%), and anal sex were 213(13.3%). HIV prevalence was 77(5.2%) with urban 46(6.5%) and rural 31(4.1%). About 78(13.5%) were raped and 216(13.4%) had sex in exchange for money. The significant HIV predictors were: age group 20-24 years OR = 2.66 95% CI 1.08–7.21; unprotected anal sex OR 2.62 95% CI 1.12–6.12; knowledge of discharge as an STI symptom OR 0.21 95% CI 0.09 – 0.48; and abstinence OR 0.24 95% CI 0.07 – 0.80.

Conclusions:

Out of school youths have higher HIV prevalence compared to 3.0% national average for youths aged 15-24years. They engaged in risky sexual behaviors. There is a need for age-specific HIV interventions to promote STI knowledge, condom use and behavioral change.

Keywords: *Assessing, Predictors, HIV infection, Rural, Urban and North Central Nigeria*

Abbreviations

AIC	Akaike Information Criterion
AIDS	Acquired Immunodeficiency Syndrome
BIC	Bayesian Information Criterion
EAGMR	Education for All Global Monitoring Report
EPP	Estimation and Projection Package
FCT	Federal Capital Territory
FLHE	Family Life Health Education
GARPR	Global AIDS Response Progress Report
HIV	Immunodeficiency Virus
LBSE	Life Skilled Based Education
LGA	Local Government Area
NAFDAC	National Agency for Food and Drug Administration and Control
NARHS	National HIV/AIDS and Reproductive Health Surveys, 2007
NARHS	National HIV/AIDS and Reproductive Health Surveys, 2012
NC	North Central
NERDC	Nigerian Educational Research and Development Council, 2003
NDHS	Nigeria Demographic and Health Survey2008
NNR	Non-response Rate
NPC	National Population Commission
OOSY	Out of School Youths
PCA	Principal Component Analysis
ROC	Receiver Operating Characteristic Curve
SPSS	Statistical Package for the Social Sciences
UNAIDS	Joint United Nation Programme on HIV/AIDS
UNESCO	United Nation Educational, Scientific and Cultural Organization
UNGASS	United Nations Special Session General Assembly 2010
UNICEF	United Nations Children's Fund

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Chapter One

1.1 Introduction

Human Immunodeficiency Virus (HIV) is the virus that causes the Acquired Immunodeficiency Syndrome (AIDS).(1) HIV is capable of affecting productive life, and youths are particularly vulnerable.(2) Generating evidence for HIV prevention is of national and public health importance among youths. According to the Joint United Nations Program on HIV/AIDS (UNAIDS), youths are defined as those who fall within the age group of 15-24years. Due to the difficulty in measuring country HIV incidence, youths HIV prevalence is used as a proxy by UNAIDS in estimating HIV incidence since they often times are sexually active.(3),(4) Youths are critical to economic development, and they have the potential to influence changes in the society.

The recently released Nigeria Global AIDS Response Progress Report of 2013 showed that out of 220,394 new HIV infections, youths were responsible for 54,662 (24.8%) which is about a quarter of new infections in the country from the Estimation and Projection Package (EPP)/ Spectrum.(5) Secondly, out of 210,031 annual HIV/AIDS deaths in 2013, youths were responsible for 8,236 (about 3.9%).(5)

In Nigeria, the 2007 National HIV/AIDS Reproductive Health Survey (NARHS), a population based survey with a national HIV prevalence of 3.6%, of which youths (15-24 years) had a prevalence of 2.4%.(6) Also, 2012 NARHS had national HIV prevalence of 3.4% of which youth HIV prevalence was 3.0%.(7) The 2010 United Nations General Assembly (UNGASS) report for Nigeria showed that only 24.2% of youths knew correct methods of preventing sexual transmission of HIV (2010 UNGASS). Similarly, 2008 Nigeria Demographic and Health Survey (NDHS) showed that only about 28.2% of male and 19.7% of female that were aged 15 – 19 years of age had access to compressive knowledge about HIV and its ways of transmission. Provision of youth friendly services and appropriate sexual education initiatives are crucial to the success of HIV prevention programs in the general population.

Importantly, youths are at higher risk of HIV/AIDS and other sexual and reproductive health problems. The high risk for HIV among youths may be due to socio-cultural and harmful cultural

practices, psychological and biological factors.(8) Youths have been known to practice high risk sexual behaviors leading to higher chances for sexually transmitted infections (STIs), in addition to early initiation of sexual intercourse.(9) These high risk behaviors at early age make youths to be more vulnerable to HIV infection. Youthful period is often characterized by sexual experimentation, engagement in unprotected sexual intercourse, multiple sexual partnership and premarital sex with poor information on sexual and reproductive health.(10)

Youths may be classified as in-school and out of school youths. Classification of youths into these two categories gives the opportunity to assess group specific risks for HIV infection, and identify potential opportunities to develop prevention programs within the groups. In-school youths have been privileged to be reached with various strategic HIV prevention programs, as schools offers conducive environment for reaching out to these youths.(11) More so, youths are at risk of unwanted pregnancies and sexually transmitted infections including HIV.(12),(13) This translate to the need to promote efficient prevention programs for them. Additionally, youths in schools are usually reached with formal HIV education such as Family Life Health Education (FLHE) to promote behavioral change and reduce new infection among them in Nigeria. FLHE was started in 2003 as a school health education intervention program. FLHE is a curriculum-based HIV prevention initiative to promote healthy sexual and reproductive health life among in-school youths through knowledge-based learning and skill acquisition towards attitudinal and behavioral change.(14) This school based program has been able to raise effective peer administered initiatives that strengthen HIV prevention and control efforts in the schools.(11)

Furthermore, FLHE prevention program has been offering lifestyle changing information and behavioral promotion change in the areas of sexuality, abstinence and contraception in schools. FLHE has been supporting in-school youths in making rightful sexual choices and addressing wrong information on sexuality.(15) Another important opportunity within school is the Life Skilled Based Education (LBSE). LBSE supports in-school youths to reduce their high risk sexual behaviors, promote healthy living and provide up-to-date information with regards to knowledge of HIV prevention, with interpersonal and negotiation skills.(16)

Importantly, Nigerian Government promotes school health programs as part of the multisectoral response to HIV intervention. One of such national responses involves strategic collaboration

between National Agency for the Control of AIDS (NACA) and Federal Ministry of Education. This has led to the provision and strengthening of life skills-based HIV education in schools, contributions to school attendance among orphans and non-orphans, and linkage between schooling and safer sexual behavior.

Unfortunately, there are no such structures for out of school youths with respect to HIV prevention, and sexual and reproductive health. HIV risk may be more critical among out-of school youths. Out of school youths (OOSY) may be at a higher risk for HIV/AIDS.(17) Furthermore, out of school youths engage in risky sexual behaviors with early initiation of sexual intercourse since they are not attending school or have dropped out of school. Their non-attendance of school makes them miss great opportunity to acquire knowledge about HIV and reproductive health in a stable and credible environment.(18) Out of school youth are often neglected in prevention outreach and education efforts in Nigeria. They are vulnerable to misinformation about their society, lack reasonable role model and are sometimes under the societal pressure of what to do and choice of behavior. Equally important, out-of-school youth are often marginalized from mainstreaming opportunities/services and live under challenging conditions such as lack of food, shelter, vocational training and misinformation on HIV and sexual/reproductive health. Some out of school youth have even lost their parents due to AIDS. Additionally, many out of school youths (OOSY) sometimes have poor access to correct and accurate information on education related to sexuality including HIV.

Nigeria is divided into six geopolitical zones namely North West, North Central, North East, South West, South South and South East. Nigeria has an estimated population of 172,901,469 of which people aged 15 – 24 years were estimated to be 32,755,196 (18.9% of the total population as at 2013).(19) Youths therefore make a reasonable proportion of the population in Nigeria. Equally important, in 2013 North Central Nigeria has a population of 25,167,032, and has six states and the Federal Capital Territory. Two of the North Central states are Benue and Kogi. Benue and Kogi states have a population of 5,247,624 and 4,088,462 respectively with an annual growth rate of 3% per state.(19) From the 2007 NARHS figure (national HIV Survey), North Central has the highest magnitude of HIV infection 5.7%, followed by South-South with HIV prevalence of 3.5%, North East with a prevalence of 3.4%, South West with a prevalence of

3.4%, North West with a prevalence of 3.0% and South East with the lowest HIV prevalence of 2.6%

In addition to the out of school youths sexual and reproductive health issue, Nigeria has an increasing number of orphans. In 2012, the total number of orphans was 1,230,782; in 2013, it was 1,266,314 and it is expected to be 1,298,568 at the end of 2014 from the estimates and projections using Estimation and Projection (EPP) and spectrum software packages.(5) Increasing number of orphans may have effect on increasing number of out-of-school youths as many youths may not be able to cater or sustain their education due to loss of their parents to provide education support. This is further compounded by low enrolment and drop-outs from schools. The available figure on secondary enrolment in Nigeria was estimated to be 32% in 2005.(20)

1.2 Problem Statement

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), one in every five children in Nigeria is out of school and about 10.5 million young people are out of school which is the highest in the world as Nigeria is responsible for 47% of out of school youths estimate in the world.(21)

Out-of-school youths have been neglected in HIV prevention efforts and there is very little information about the magnitude and predictors of HIV among them. Previous studies have shown that out of school girls are more likely to engage in risky sexual behavior when compared to the in-school girls.(22),(23)

Youths in schools are usually reached with formal HIV education programs such as Family Life Health Education (FLHE) but limited structures or strategies exist for reaching out-of-school youths, and this makes research, programming and policy issues among them necessary, critical, timely and important. Unfortunately, out of school youths are not connected to the school structure and opportunities to prevent HIV; and lack of access to formal school education deny out of school youths the opportunity of HIV counselling and prevention services. Additionally, out of school youths are exposed on the street or motor parks to alcohol abuse and drug use

which further aggravates their HIV risk status. Other possible risks among out of school youths include sexual violence such as sexual coercion/rape, sexual trafficking and prostitution or sex in exchange for money.

Chapter Two

2.1 Rationale of the study

Out of school youths are important people group in any society. Some out of school youths left school as a result of poor access to schools especially those in rural areas, inability to afford school education due to economic problems, marginalization of girls from going to school and some of them were denied opportunity for schooling due to family decision or reasons. Other out of school youths could not attend schools as a result of armed conflicts. This has led some of the youths to hawk food or other sellable things due to family needs, and others to engage in some trades at tender age. Unfortunately, out-of-school youths are often neglected in HIV prevention programs. Various programs have been implemented by Ministries of Health and Education among secondary school students in Nigeria. Other programs have been implemented by the United Nations Children's Fund (UNICEF) and the United Nations Population Fund with regards to sexual and reproductive health needs among out of school youths. (24) Other documented studies have shown some evidence on sexual and reproductive health programming among out of school youths.(25)

Unfortunately, little evidence is available on magnitude and predictors of HIV among out of school youths. There is a need to address HIV intervention needs among out-of-school youths given that they have a high risk of HIV.(22),(23) Strategic planning for these interventions will need country specific evidences. Although documented evidences from Sub-Saharan African countries such as Ethiopia and Uganda have shown that out of school youths are among the risk groups for HIV.(25),(26) Unlike Nigeria, little is known about HIV prevalence, and risk factors associated with HIV infection among out of school youths especially comparing urban and rural variations. Data that reflect Nigeria-specific HIV epidemiology among out of school youths is much needed given that Nigeria has different socio-cultural and economic conditions to these countries. Moreover, no national survey with biological markers has been conducted among out-of-school youths in Nigeria. The paucity of data on HIV and associated risk factors makes research that is capable of providing evidence to formulate impact-oriented national interventions among out of school youths crucial. This is important towards universal access to comprehensive prevention.(27) Hence, implementing timely, well targeted and innovative

prevention programs require evidence based knowledge about the risk factors or drivers of the epidemic among them. This is important towards generating information for scalable and sustainable HIV interventions among out of school youths.

2.2 Objectives of the Study

2.2.1 The primary objective:

- To assess the predictors of HIV infection among out-of-school youths (OOSY).

2.2.2 Secondary Objectives:

- To obtain baseline estimate for HIV prevalence among out-of-school youths
- To collect data on sexual and reproductive health indicators among out-of-school youths
- To determine the difference in HIV associated risk factors between urban and rural out-of-school youths

The research question:

What risk factors are associated with HIV infection among out-of-school youths in rural and urban areas of North Central Nigeria?

These objectives and research question are in line with the national HIV prevention priorities to assess HIV prevention efforts among out of school youths, to estimate HIV prevalence and assess the predictors of HIV among the youths. This study will generate data on sexual and reproductive health indicators among out of school youths ***including HIV test results***. The findings from this study will support the planning, implementation and assessment of HIV national response in Nigeria among out of school youths. This research will provide information on opportunities for HIV prevention among out of school youths, gaps in HIV programming, and opportunities for further research using both qualitative and quantitative methods. Also, it will provide guidance for appropriate sexual and reproductive health strategies. Therefore, it is important to identify the association between HIV and sexual and reproductive health factors among out-of-school youths for evidence based decisions capable of influencing new programs and policies. This is important for evidence-driven HIV programming.

Chapter Three

3.1 Methods

A cross sectional study was conducted among out of school youths in North Central Nigeria. The results from the study were compared with reviewed literatures (articles and programmatic documents). Method employed involved the review of published literatures (local and international articles), and desk review of programmatic or technical documents at national and sub-national levels with regards to HIV, sexual and reproductive health among out of school youths. These documents included Antenatal Care (ANC) survey 2008 and 2010 reports, United Nations Special Session General Assembly (UNGASS) 2010 report, Integrated Biological Behavioral Surveillance Survey (IBBSS) 2007 and 2010 reports, National HIV/AIDS Reproductive Health Survey (NARHS) 2007 and 2012 reports, and Global AIDS Response Progress of 2011, 2012 and 2013 reports. The reviews were needed to know what was currently existing in Nigeria among out-of- school youths, the gaps and opportunities that are available to prevent HIV, understand situational analysis among out of school youths and ways to improve HIV programming through evidence-based and impact-oriented interventions.

3.1.1 Study Area

Nigeria is divided into six geopolitical zones namely: North West, North Central, North East, South West, South East and South-South. Importantly, North Central (NC) had the highest HIV prevalence in the country in NARHS 2007. HIV prevalence in North Central was 5.7% with Benue and Kogi having 6.5% and 1.2% HIV prevalence respectively among the youths. North central Nigeria is the middle belt of Nigeria and is made up of Federal Capital Territory (Nigerian Capital and the seat of Government) and six states namely Benue, Kogi, Kwara, Nassarawa, Niger and Plateau. Out of these seven states, Benue and Kogi states were chosen because they had the highest and lowest HIV prevalence in the zone respectively. HIV prevalence for the remaining states was: Kwara (2.7%), Nassarawa (4.1%), Niger (1.8%), Plateau (1.5%) and Federal Capital Territory (FCT) (5.8%).

Benue State derives its name from river Benue that has its source from Cameroon. Its capital is Makurdi. It has 23 Local Government Areas (LGA) and is bounded by Nassarawa State to the North, Taraba State to the East, Enugu, Ebonyi and Cross River States to the South and Kogi State to the west. It has a land mass of 34,059 square kilometers. It is one of the largest states in

Nigeria and is mainly an agricultural state. It is called the food basket of Nigeria with farming as a predominant occupation. The farming is mainly subsistence in nature. The state has predominantly rural LGAs; and has Idoma, Tiv, Igbala and Igede as the main tribes or ethnic groups. Twelve LGAs were randomly selected for the study of which three were urban. These urban LGAs were: Makurdi; Gboko and Oturkpo. The rural LGAs are as follows: Tarka; Oju; Ohimini; Katsina-Ala; Gwer West; Gwer East; Apa; Okpokwu and Logo.

Kogi State is also called Confluence State because River Niger and River Benue met in its capital. The capital of Kogi state is Lokoja and was the first capital of Nigeria during the colonial area in 1914. It is an agricultural state with predominant farmers and subsistence in nature. Additionally, the state has large reserve of mineral resources such as iron, limestone, tin, crude oil and coal. It has the largest reserve of iron ore, and other important mineral deposits such as limestone. It occupies a land mass of 29,833 square kilometers and is bounded on the North by Nassarawa, Federal Capital Territory and Kwara States, on the East by Benue State, on the South by Anambra and Enugu States, and on the west by Edo, Ekiti and Edo states. The main tribes are Yoruba, Ebira, Hausa and Igala. There are 21 local government areas in Kogi state with 12 LGAs randomly selected for this study. There were six urban LGAs selected namely: Igalamela-odolu; Kabba/Bunu; Lokoja; Ajaokuta; Okene and Okehi. Also, there were six rural LGAs selected namely: Adavi; Ofu; Olamaboro; Ankpa; Ijumu and Yagba West.

3.1.2 Study design

This is cross-sectional study design conducted among out of school youths male and female aged 15 – 24 years in urban and rural areas of Benue and Kogi States in North Central Nigeria.

Figure 3.1: Map of Nigeria

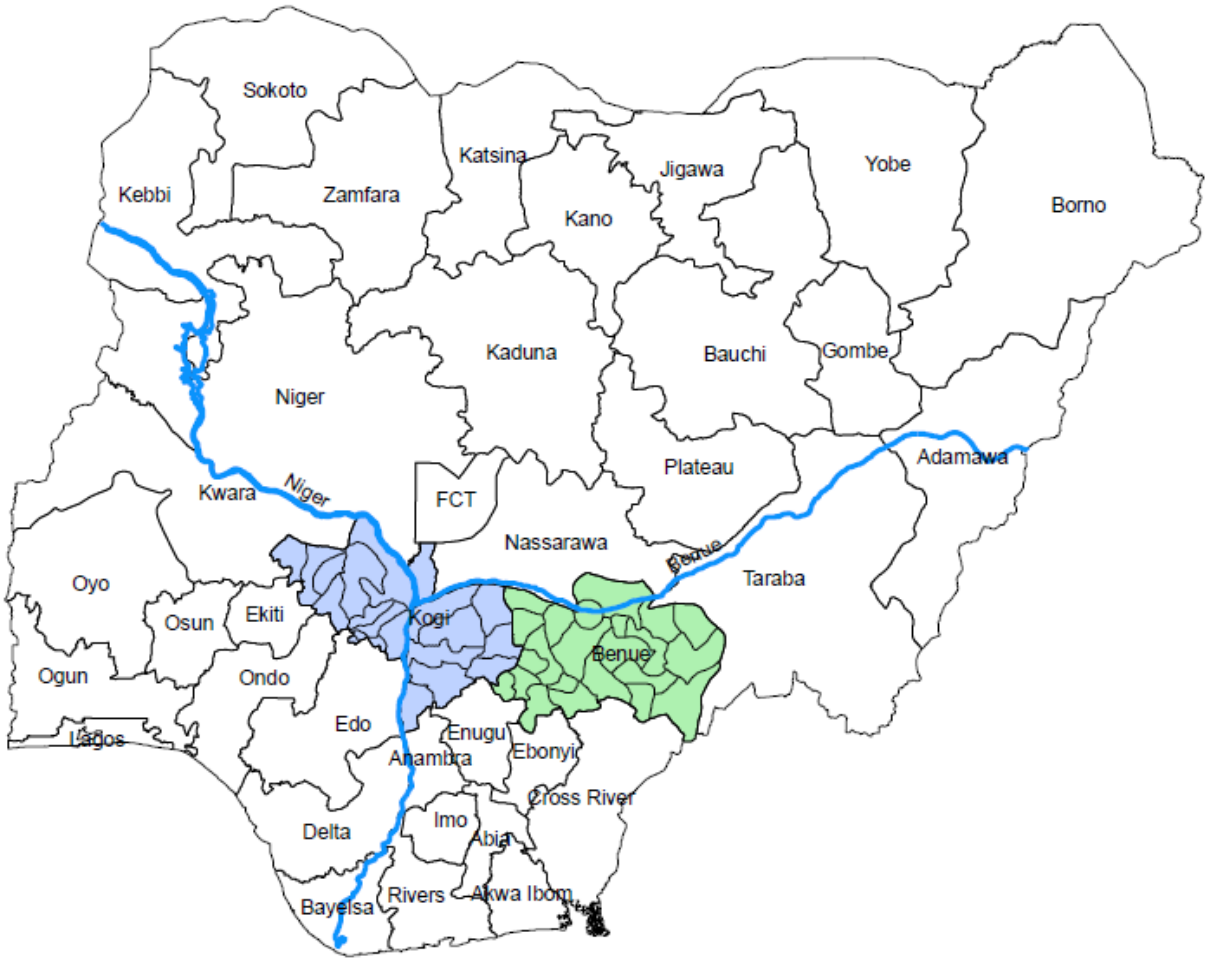


Figure 3.1 shows the map of Nigeria with Kogi state colored in blue and Benue state colored in green located in middle belt of Nigeria in North Central geopolitical zone.

Figure 3.2: Map of Kogi State

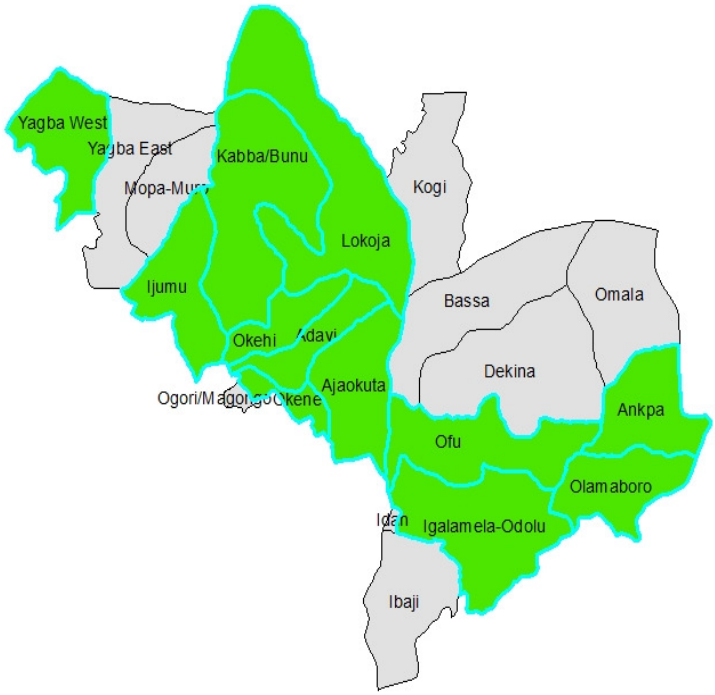


Figure 3.2 shows map of Kogi states with the 21 local government areas (LGAs) and the 12 research study LGAs colored in green

Figure 3.3: Map of Benue State

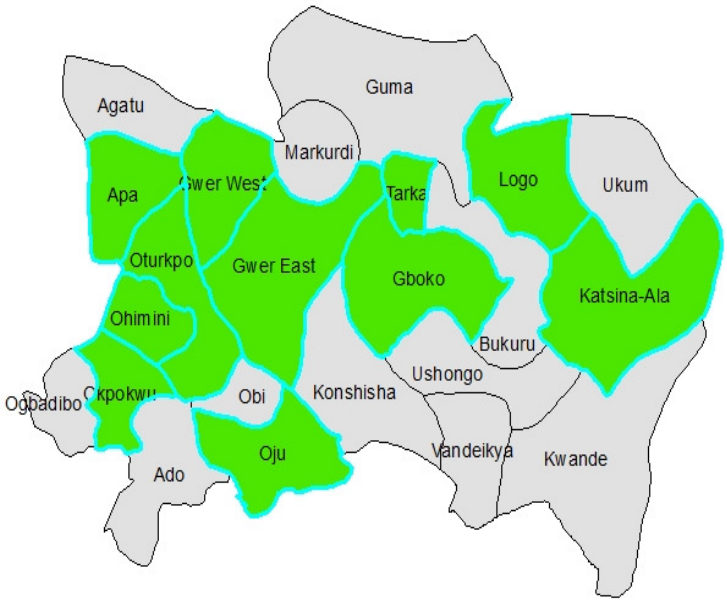


Figure 3.3 shows map of Benue states with the 23 local government areas (LGAs) and the 12 research study LGAs colored in green

Figure 3.4: Benue and Kogi States

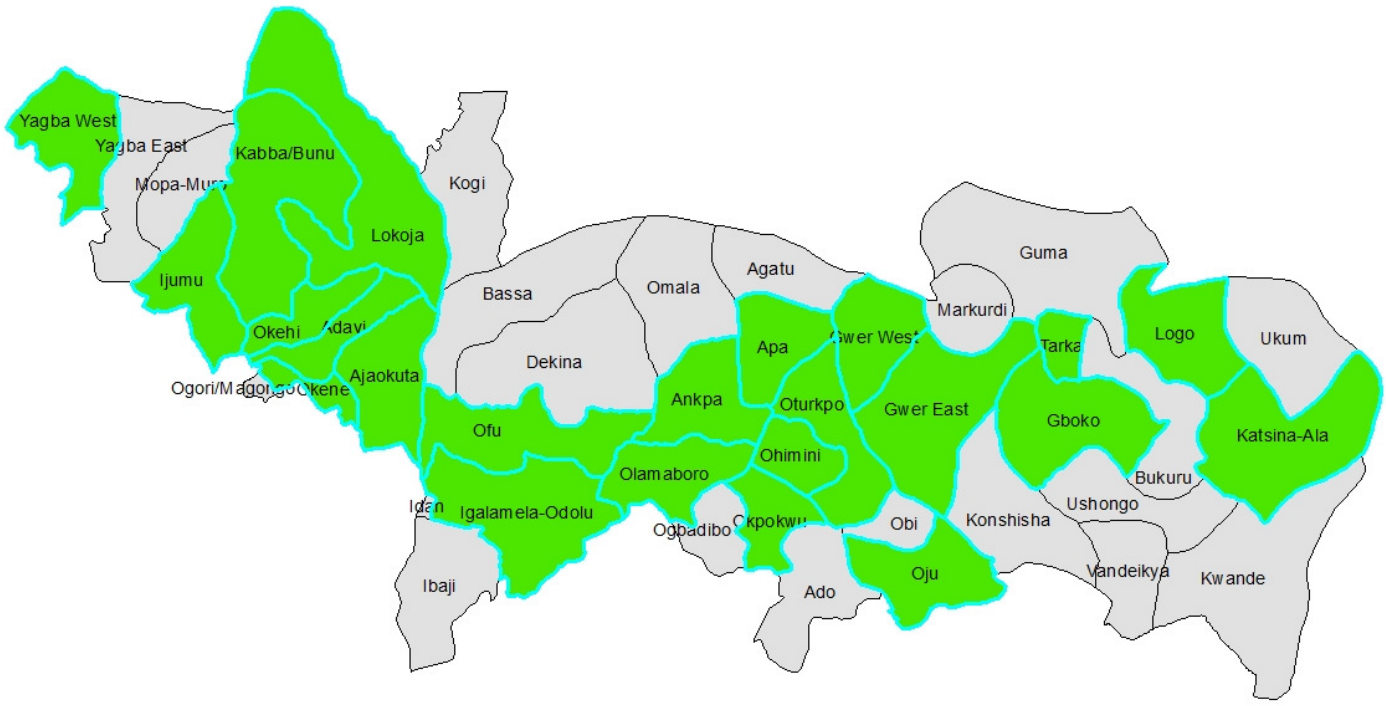


Figure 3.4 shows map of Kogi and Benue states combined. The states are adjoining and is a strip in the North Central Nigeria

3.2 Study Population

Out of school youths in 12 local government areas (LGAs) in Benue and 12 local government areas in Kogi were randomly selected. These 24 LGAs are made up of rural and urban areas. Those selected were participants or respondents that were between the ages of 15 and 24 years who were not in school but living in Benue and Kogi States.

3.2.1 Sample Size Calculation:

The formula used for sample size calculation was informed from previous studies,(28),(29)

$$N = \frac{Deff \cdot Z_{\alpha}^{2} \cdot p.q}{d^{2}}$$

where:

N is the minimum sample size

Deff is the design effect (Deff=2). This was introduced because of the clustering effect in the selection of respondents.

Zα is the standard normal deviation corresponding to a 2 sided level of significance of 5%

p is the North Central HIV prevalence (5.7% from NARHS 2007)

q is (1-p)

d is the level of precision (d=2.5%). This value was chosen to increase the precision and thereby reduce the standard error in estimating the confidence intervals.

n= 330.4

N = Deff* 330.4

N= 660.80

In the two states, this will be (N*2) = (660.8*2) = 1321.60

A further assumption was 17% non-response rate (NNR) or refusal rate for HIV testing. This non-response rate was in line with NARHS estimate.

N_{final} =N/(1-NNR) = 1321.60/(1-0.17)= 1592.3 ≈1600

The total sample size was 1600 with 800 questionnaires randomly administered in each state (the high prevalence and low prevalent states)

3.3 Sampling Method/Study Sample Selection

A multi-stage cluster sampling technique was used to select the eligible respondents or participants that were out of school. This study was intended to be comparable with youths of the same age group (15 – 24 years) in the 2012 National HIV/AIDS and Reproductive Health Survey (NARHS).(7) NARHS is a population based national survey that was conducted in 2012 in all the states in Nigeria. Simple random sampling was used to select 12 local government areas after stratifying by rural and urban areas. Benue has 23 LGAs while Kogi has 21 LGAs with 12 LGA selected from each. In the 12 LGAs, 20 clusters were selected by simple random sampling.

In this study, three groups of respondents were selected, those from the household, those from the artisan shops/motor parks, and those from the streets.

Three strategies were used to minimize selection bias in this study. These strategies include the use of multi-stage cluster sampling technique, the use of comprehensive sampling frame with lists of out of school youths, and reaching out to the hard to reach populations such as homeless on the streets. A recent law in Nigeria that criminalized same sex relationship and marriage made it difficult to identify transgender and homosexual youths for the study. Thus, information could not be collected from them, and from homeless youths that were less than 18years of age with no parents or guardians to provide the informed consents needed for the study.
Prior to data collection, six months were devoted to community mapping from April – October 2014 to compile a comprehensive sampling frame involving out of youths in the households, artisan shops and to map the streets.

The out of school youths that were selected from the households in this study were from the mapped household lists used for 2012 NARHS. The mapped houses contained a list of households from which out of school youths were selected by systematic random sampling. These lists were verified during the community mapping period. NARHS used a national master sample frame that was developed by National Population Commission (NPC). This frame has a disaggregation by rural and urban local government areas, and by enumeration areas or clusters. The frame is regularly updated and maintained by NPC. This sample frame was used for the two states.

The remaining respondents were from the artisan shops, motor parks and streets (hawking). The procedure for their selection is described below:
Within each selected local government area, trade groups/associations were identified. Such trade groups include Association of Mechanics; Nigerian Union of Road Transport Workers; Association of Market Women; Associations of Hair Dressers; Association of Miners and so on. A list of all these associations was made. These trade union associations gave access to their members in parks, shops and offices to develop a list which was compiled by the research assistants. The compilation and mapping were done within the six months prior to the commencement of the data collection. From the list, systematic random sampling was done with a sampling fraction of 8. This fraction was obtained from the total number of out of school youths divided by the sample size.

When the numbers of out of school youths were exhausted in the artisan shops, offices and parks during data collection process, the remaining numbers of out of school youths were obtained from the streets. Streets were randomly selected within the study areas. Every eighth out of school youths that were met on the street, hawking or homeless who were aged at least 18 years, not attending school or waiting for admission were selected. Those that were aged less than 18 years with no parent or guardian to give consent were excluded.

Therefore, state representative samples were selected in the two states among the out of school youths aged 15 – 24 years from households, artisan shops and streets.

Stage 1 This involved identification of local government areas in Benue and Kogi States and classifying them into rural and urban areas based on National Population Commission (NPC) grouping and according to what was classified as rural and urban areas in 2012 NARHS
Stage 2: This entailed the selection of enumeration areas (EA) or clusters as defined by NPC. The enumeration areas were selected within rural and urban areas.
Stage 3: This entailed listing and selection of households, motor parks, artisan shops and streets within the EAs
Stage 4: Selection of study participants from households, streets, motor parks and artisan shops for questionnaire administration and HIV testing using systematic random sampling

A total of 1,600 participated in the study. Data collection was done among out of school youths selected or identified at the households, streets, motor parks and artisan shops using structured questionnaires. Out of school youth was defined as: youths that are aged 15 – 24 years who are currently not in school or dropped out of school for at least two years.(30)

3.4 Study Instruments

There were two study instruments namely questionnaire with an informed consent and a referral form for those that were reactive.

A structured questionnaire was used. The questionnaire contained five sessions:
Section A: Socio-Demographic Characteristics

Section B: Family and Socio-Economic Characteristics
Section C: Assessing HIV Infection (using knowledge of transmission; practices related to HIV/AIDS; HIV/AIDS and risk perception; and stigma and discrimination
Section D: Sexual and Reproductive Health Behavior
Section E: HIV Associated Risk Factors

The questionnaire was adapted from 2012 NARHS and 2008 Nigeria Demographic and Health Survey. The referral note contained the HIV test results and the name of the nearest comprehensive hospital/clinic for further evaluation and management. The informed consent contained the explanation for the study, the risk and benefit of taking blood, and the signature of participants or guardian/parents.

3.5 Data Collection

Before data collection was done, letters were sent to various Heads of Community that control the villages and towns and Heads of Associations or trade unions that control the motor parks or artisan shops and markets within the sampled cluster or enumeration areas to intimate them about the study and requesting their cooperation during the data collection and HIV testing period. Identity cards were also made for the members of the research team.

3.5.1 Training and Pre-testing

Ten research assistants were recruited for the study among experienced data collectors/counsellor-testers that were previously involved in various national surveys such as 2012 NARHS. Five research assistants were recruited for Kogi State and five research assistants were recruited for Benue State. Each state team comprised four interviewers/counsellor-testers and one supervisor. The supervisor had more experience than the data collectors and HIV testers. They supervised the study and ensured that high quality data were collected. They provided support and leadership for data collection, questionnaire editing, collation, and sending the questionnaires to Abuja for central data entry.

Prior to data collection, there was a six day central training in Abuja involving the ten research assistants and supervisors in November 2013. The first three days were to review, discuss the

questionnaire, edit and restructure the questionnaire. This was necessary to ascertain the content, flow and reliability of questions for the study. It also involved a role play where the questionnaires were administered, and HIV testing was done in which the research assistants paired up. The fourth and five days were used for the pre-test. The pre-test was done in Nassarawa State, a nearby state to Abuja where the research was not primarily done. This involved the administration of 100 questionnaires to out of school youths in Maraba, Keffi and Lafia of Nassarawa state. These three towns have rural and urban areas. Out of school youths were found in the households, streets, motor parks and artisan shops. The pre-test was an opportunity to assess the questionnaire, the process and procedure for data collection and management. It also gave the opportunity to identify gaps in the questionnaire or data collection process and ways to address them. Some gaps were observed in the questionnaire such absence of age at first sex and use of injected drugs like cocaine. Other observations such as skip issues were corrected in the questionnaire. Thus, the pre-test gave room for the editing of the questionnaires.

Study data collection was done from end of November 2013 to January 2014 in Kogi and Benue States. The team of five study staff (four research assistants and one supervisor) moved from one enumeration area to another for data collection. At the end of each day, the filled questionnaires were submitted to the supervisors by the research assistants. The supervisors were saddled with the responsibility of reviewing and editing the questionnaires, and effecting necessary corrections with the research assistants.

3.5. 2 Inclusion Criteria

Youths that were out of school for at least two years, who are aged 15 – 24 years, who gave consent or assented to participate and had lived in that area for at least six months were included in the study.(30), (39)

3.5.3 Exclusion criteria

Anybody in-school or less than 15years or more than 24years of age, who refused to give consent or assent to participate and had lived in the area for less than six months. The homeless youths less than 18years with no parents or guardian to give consent were excluded.

3.6 Data Management

Data entry was done with Statistical Package for the Social Sciences (SPSS) version 21. Double data entry was done by two data entry clerks. The variables entered by each data entry clerk were compared for discrepancies. Discrepancies were resolved by cross-checking from the questionnaires. Additional data entry strategy was employed in which 25% of the total questionnaires were randomly selected, and checked in the SPSS database to be sure they were correctly entered in order to validate the entered data. Data cleaning was done using SPSS 21.0. The questionnaires were stored in a locked room and the computer containing the research project had a password. After the data cleaning was done, it was exported from SPSS 21.0 to Stata 12.0 for analysis.

Univariate and bivariate analyses were done at the level of rural and urban disaggregation. Multivariate strategy involved a combined analysis and not at the level of rural and urban areas since it had no statistically significant difference between location (rural and urban areas) and HIV among out of school youths in the study.

3.7 Data Analysis

Data analysis was done with Stata 12.0 special edition (SE) of Stata Corporation, College Station, Texas US. Stata was preferred because of its unique capability to handle survey data that are of multi-stage cluster sampling technique. Thus, survey data analysis mode was set in Stata with weight applied to account for the multi-stage sampling technique and clustering effect. The analysis weight was derived from the sampling fractions calculated from sample size and the eligible population in the state in 2013. Cronbach alpha was used to measure the internal consistency and reliability of the questions. Cronbach's alpha is a statistical method used in the measurement of internal consistency or reliability of questions or variables in the study instruments.(31) It measures the relatedness of questions on a scale and it tests the reliability of an instrument or set of variables used to assess information on a particular subject matter.

Wealth index is a composite measure of wealth or economic status using household assets, possessions and utilities. The index uses information on ownership of household assets. This involves the use of principal component analysis that gives weights or factor scores to the

various items that are needed in computing the wealth index. PCA is a statistical and mathematical method that transforms household assets which are likely correlated variables into uncorrelated variables thereby reducing its multiple dimensionality of the variables.(32) Only the first principal component that corresponds to the largest value was used in this study. PCA places the household assets into a continuous score.(33),(34) After the computation, the generated scores are then divided into wealth quintiles: low, middle and high.

To be precise, the wealth index was computed from the following variables:

Land, house, motorcycle, car, bicycle, truck, generator, cable/satellite dish, television, refrigerator, washing machine, farmland, goat/cow, canoe, wood, kerosene, gas, electricity, tap water, dug well, well with pump/borehole, surface water, rain water, water vendor, sachet water, bush, pour flush, pit latrine/VIP latrine, water system/closet, bush, refuse dump, and main dustbin collected by waste collector.

Univariate, bivariate and multivariate analyses were done. Analysis was done for univariate and bivariate at the level of rural and urban areas. However, at the level of multivariate analysis, since there was no significant difference between location (rural and urban areas) and HIV, a combined analysis was done to ascertain the predictors of HIV among out of school youths in rural and urban areas of North Central Nigeria.

The univariate analyses were represented in tables and graphs using absolute figures and percentages and mean/median. Univariate analysis for categorical variable included missing. This research is interested in missing category to undertake multiple imputations during publication.

In addition to the univariate analysis of these study variables, secondary data analyses or extract from reports for 2007 and 2012 National HIV/AIDS and Reproductive Health Surveys (NARHS) were done. This was necessary to compare the findings from this study to the two national population-based surveys. This enabled states (Kogi and Benue) and location (urban and rural) comparison.

The bivariate analysis involved complete case analysis. Bivariate analysis involved the use of chi square test or Fisher's exact test for cell count less than 5 and for categorical variables. Student t-test was used to compare means of two continuous variables. The level of significance was <0.05. However, variables that were significant at the level of 0.2 in the bivariate analysis were included in the multivariate analysis during the model building.

The multivariate analysis was done using multiple logistic regression models. The multiple logistic regression models were used to model effects of variables upon HIV test result as a dependent variable among out-of-school youths.

- **Model selection**

Model selection involved a prior selection of variables. Although there was no known study with HIV testing among out of school youths in English literature, studies of out of school youths with sexual and reproductive health risk factors were used. In addition, 2007 NARHS dataset was used to explore significant predictors of HIV among youths aged 15-24years. The following variables that were obtained from previous surveys or studies and from 2007 NARHS dataset were: sex, age category, occupation and place of residence (rural and urban).(6),(7) These variables were kept fixed during the model building process.

In addition to the fixed variables, variables that were significant at p=0.2 and below at the bivariate analysis level were used during the model building. P-value of 0.2 was used as against 0.05 as this may exclude potential important variables.(35),(36)

Forward-stepwise selection method was used by adding study variables to the model that had fixed variables one at a time. Akaike information criterion (AIC), Bayesian information criterion (BIC), Receiver operating characteristic (ROC) curve and percentage of cases correctly classified were used for model selection. AIC is a statistical method that uses information theory and maximum likelihood principle. The model that is preferred is the one that has the lowest AIC value.(37) BIC like AIC is a model selection method that also uses maximum likelihood principle. It uses penalty term like AIC to overcome over fitting of models. The model that is given preference is the one that has the lowest BIC value.(38) ROC curve is a plot that compares sensitivity with 1-specificity (false positives).(39) It gives a discriminatory value by computing

the area under the curve. The model with the largest area under the curve is preferred. Percentage cases correctly classified is the negative predictive value. The percentage of cases correctly identified is a diagnostic ability of the model to discriminate those that do not have the disease given that the test is negative. The model with a higher percentage is the better one for selection. The level of significance was <0.05.

The following models were the four best models that were chosen from the forward selection process:

Model 1: age category, sex, occupation, place of residence, knowledge of STI discharge, knowledge of painful sensation, abstinence and antibiotics for STI.
Model 2: age category, sex, occupation, place of residence, knowledge of STI discharge, knowledge of painful sensation, abstinence, antibiotics for STI and sexual intercourse in the last 12months.
Model 3: age category, sex, occupation, place of residence, knowledge of STI discharge, knowledge of painful sensation, abstinence, antibiotics for STI and being sexually active.
Model 4: age category, sex, occupation, place of residence, knowledge of STI discharge, knowledge of painful sensation, abstinence, antibiotics for STI, being sexually active and practice of anal sex.

These variables were measured as follows:

- The age category was captured as “20 – 24years and 15 – 19 years”
- Sex was captured as male and female
- Occupation was measured as “yes” for the employed and “no” for the unemployed.
- The knowledge of genital discharge as an STI symptom was captured as “yes or no”.
- The knowledge of burning sensation as an STI symptom was captured as “yes or no”.
- Being sexually active was captured as “yes or no”.
- Sexual intercourse in the last 12months was captured as “yes or no”.
- Anal sex was captured as “yes or no” with “yes” regressed on “no”.
- Abstinence was captured as “yes or no” with “yes” regressed on “no”.
- Antibiotics use for STI infection was captured as “yes or no”.

Based on the values of AIC, BIC, ROC and percentage cases correctly classified, model 4 was eventually selected as the best model as shown in results section under multivariate analysis in Chapter four.

Variables in model 4 were measured and analyzed as follows:
In age category, the respondents with 20-24years were regressed on 15-19years of age; in sex, male was regressed on female; in occupation, employed respondents were regressed on unemployed respondents; in place of residence, rural was regressed on urban; in knowledge of STI discharge, yes to knowledge of STI discharge was regressed on no to knowledge of STI discharge; in knowledge of painful sensation, yes to knowledge of sensation was regressed on no to knowledge of sensation; in abstinence, yes to abstinence was regressed on no to abstinence; in antibiotics for STI, knowledge of antibiotics for STI was regressed on no knowledge of antibiotics for STI; in being sexually active, respondents that were sexually active were regressed on those that were not sexually active; and in practice of anal sex, respondents that practiced anal sex were regressed on those that did not practice anal sex.

Further analyses were done by fitting variables related to males only and fitting variables related to females only.
The variables for male only logistic regression include:
Age category, occupation, place of residence, knowledge of STI discharge, knowledge of painful sensation, abstinence, antibiotics for STI, being sexually active, practice of anal sex, male circumcision, ever had sex with female sex workers and condom use with female sex workers. The output of this model is shown in results section under multivariate analysis in Chapter four.
The variables for female only logistic regression include:
Age category, occupation, place of residence, knowledge of STI discharge, knowledge of painful sensation, abstinence, antibiotics for STI, being sexually active, practice of anal sex, had sex in exchange of money and was sexually assaulted/raped. The output of this model is shown in results section under multivariate analysis in Chapter four.

- **Interaction or Effect Modification**

Another analysis that was done was for interactions or effect modification. There were four predictors of HIV in the combined model which were: age category, knowledge of STI discharge, abstinence and practice of anal sex. These interaction terms were formed using these three variables from the study such as sex, place of residence and state of residence, and these four predictors. Eventually, twelve interaction terms were formed such as 1) age category.sex 2) age category.place of residence 3) age category.state 4) discharge.sex 5) discharge.place of residence 6) discharge.state 7) abstinence.sex 8) abstinence.place of residence 9) abstinence.state 10) anal sex.sex 11) anal sex.place of residence and 12) anal sex.state

Twelve models were fitted with variables in model 4 and each of the interaction term (one at a time). Lastly, a thirteen model was fitted by adding variables in model 4 and the 12 interaction terms.

- **Model Evaluation**

It is of statistical importance to evaluate how good the independent variables were in making the predictions. Therefore, after selecting the best model which was model four, it was subjected to model diagnosis such as multicollinearity check, Hosmer-Lemeshow, goodness of fit model specification, ten-fold cross validation and assumption of linearity.

Multicollinearity occurs when there is a high correlation between two or more variables in a regression model with the affected variables in the model having large standard errors and wide confidence interval. There are two measures that multicollinearity uses. They are tolerance and variance inflation factor. Tolerance measures the amount or magnitude of collinearity that can be tolerated by the regression analysis which is $(1-R^2)$ while variance inflation factor (VIF) is a measure of the influence of collinearity in inflating the standard error. VIF is 1/tolerance. (40),(41)

Hosmer-Lemeshow goodness of fit statistic was done using Stata statistical software. It is a statistic measure that shows how the model fits the data. When the p-value is not significant, it indicates that the model fits well and no over fitting.(42)

Model Specification Test is the process of determining which explanatory variables are needed for a regression model to be sure that important variables are not excluded for the best fit of the model and key variables are included. Model specification was done using Stata statistical software.

Ten-fold cross validation was done using the Stata statistical package. This is a model validation technique to measure the performance of the predictors in the model and thereby assesses over fitting of the data.

Assumption of Linearity: This was assessing the linear relationship between the logit coefficient of dependent variable and the explanatory variables in a predictive model in order not to reduce the predictive strength of the model as a result of non-linearity.

3.8 Creation of Maps:

In order to showcase the location of Benue and Kogi states with respect to other states in Nigeria, and to showcase the selected 12 local government areas in both Benue and Kogi states with respect to the remaining local government areas, geographic information system maps were created using ARCGIS 10.1. This was to allow for spatial view of the 24 selected local government areas in both Benue and Kogi States.

3.9 HIV testing:

A vital component of the study is the HIV testing. It provided opportunity to estimate the prevalence of HIV among the study population. This is also the outcome of the study. This study was divided into two components (biological and behavioral). The biological component (HIV testing) was linked for each participant with the behavioral questions. The approach to the HIV testing was linked anonymous testing. HIV rapid test was performed using finger prick blood samples. The national parallel algorithm was used involving Alere Determine™ HIV-1/2 and Chembio HIV 1/2 STAT-PAK® for initial screening with indeterminate results resolved using Trinity Biotech Uni-Gold™ HIV 1&2 with sensitivity of 100% and specificity of 99.7%. Alere Determine™ HIV-1/2 has a very high sensitivity of 100% and a specificity of 96.8%.(43) Chembio HIV 1/2 STAT-PAK® has a high specificity of 99.3% and a sensitivity of 99.7%.(43)

The advantage of Determine is a high sensitivity and the advantage of STAT-PAK is high specificity. Prior to the commencement of the questionnaire administration, the signed informed consent had information about HIV testing. The procedure was explained to them and the possible adverse effects from taking blood were explained in the informed consent. Posttest counseling for both reactive and non-reactive participants was done. Prior to data collection, a list of comprehensive HIV/AIDS treatment centers was compiled in the study local government areas. The participants that were reactive were referred to the nearest treatment center.

3.10 Quality Control

Data quality was ensured through adequate supervision by the recruited study personnel. The supervisors ensured HIV testing standards were met in terms of safe procedure for blood collection, proper use of the test kits, disposal of needle and syringe waste products, ensuring safety procedures were undertaken during the test, and providing feedbacks to the research assistants. In addition, the Principal Investigator was on the field with the data collectors and counsellor-testers. At the end of each day, the research team met to review each day's work, lessons learnt, challenges and ways forward. Spot checks of questionnaires were done with analysis of the collected data. Also, effective communication was maintained between the principal investigator and the research team.

3.11 Dissemination

Various presentations were made on this study at the national level from 2012 – 2013 that involved various stakeholders. There is a programmatic shift towards HIV prevention among out of school youths in Nigeria from 2013. Evidence from this study is crucial for national HIV programming among out of school youths in Nigeria. The findings from this study will be presented at the HIV Monitoring and Evaluation Technical Working Group and will be used in national HIV programming among out of school youths by Government agencies, implementing partners and donor agencies. Information on the predictors and sexual and reproductive health behavior will be useful for stakeholders in addressing HIV issues among the study population.

3.12 Ethical Approval

Ethical approval for this study was obtained from National Hospital Abuja Nigeria Institutional Review Board. Signed informed consents were obtained from the participants. The informed consent contained information on blood collection for HIV testing, risks of taking blood and the purpose of the study while confidentiality was maintained. All participants were given detailed explanations of their rights to participate and ability to withdraw from the study if desired at any time. The informed consents were obtained from respondents above the age of 18years while assents were obtained from those less than 18years, and informed consents were obtained from their parents or guardians. Lastly, unique identifiers rather than names were used and all data for the study were kept in secured location and cabinet. Referral form filled and signed was given to reactive participants to undertake treatment in nearest health facilities in the rural or urban areas.

Chapter Four

4.0 Results

The total respondents were 1,600 out of school youths in Benue and Kogi States of Nigeria with 800 respondents in Benue and 800 respondents in Kogi state. There was a total of 769 (48.1%) from the urban area and 831 (51.9%) from the rural area. State disaggregation showed urban to be 311 (38.9%) and rural to be 489 (61.1%) in Benue state while urban was 458 (57.3%) and rural was 342 (42.8%) in Kogi State. The overall mean age was 20.6±2.7years with rural area slightly higher than the mean in urban area. The mean in rural area was 20.8±2.7years compared to urban area with a mean 20.4±2.7years.

4.1 Socio-Demographic Characteristics from the Univariate Analysis Comparing Rural and Urban Respondents.

Table 4.1 shows that majority of the out-of-school youths were in the age group of 20-24years with 1082 (67.6%) compared to those of 15–19years age group with 518 (32.4%). The urban area had more 15–19years of age 266 (34.6%) compared to rural area of 252 (30.3%) whereas the rural area had more 20–24years with a value of 579 (69.7%) compared to 503 (65.4%). More participants were out of school for less than five years in the rural area 624(75.1%) compared to urban area of 538(70.0%). However, mean year of out of school was higher in urban area 3.6±2.7years compared to that of rural area of 3.2± 2.3years. There were more male participants with 1023(63.9%) compared to female participants of 577(36.1%) of which rural area had more males 553(66.6%) compared to urban 470(61.1%). Participants professing Christianity were 1140 (71.3%) compared to those professing Islam 433(27.1%) and traditional religion 18(1.1%). Majority professed Christianity in rural area 615 (74.0%) compared to urban area (525 (68.2%). Conversely, majority professed Islam in urban area 227(29.5%) compared to the rural area of 206 (24.8%). There were eight ethnic groups primarily identified in the study. The predominant ethnic group was Tiv with a total of 588(36.8%) compared to Igala 327(20.4%) and Ebira 193(12.1%) and Idoma 173(10.8%). There were more rural participants of Tiv, Igala and Idoma ethnic groups compared to more urban of Ebira ethnic group.

Majority of respondents were single 1160(72.5%) with almost equal amount in both rural and urban areas. Of the 292(18.3%) that were married, 158 (19.0%) were living in rural area and 134(17.4%) in urban area. Also, 99(6.2%) were co-habiting, 21 (1.3%) were separated and 17 (1.1%) were divorced. Majority of out-of-school youths completed secondary 680(42.5%) with those that completed secondary education in rural area higher than urban area 394(47.4%) versus 286(37.2%). Incomplete secondary school education was the second highest with a value of 516(32.3%) of which it was more in respondents from urban area 278(36.2%) compared to rural area of 278(36.2%).

Table 4.1: Socio-Demographic Characteristics

Variables	**Location**			**P-value**
	Urban N(%)	**Rural N(%)**	**Total N(%)**	
Age (years)				
15-19	266(34.6)	252(30.3)	518 (32.4)	0.068
20-24	503(65.4)	579 (69.7)	1082(67.6)	
Mean age	20.4±2.7	20.8±2.7	20.6±2.7	0.009
Years of Out of School				
<5	538(70.0)	624(75.1)	1162(72.6)	0.032
≥5	216(28.1)	196(23.6)	412(25.8)	
Missing	15(2.0)	11(1.3)	26(1.6)	
Mean year of out of School	3.6±2.7	3.2± 2.3	3.4±2.5	0.080
Sex				
Male	470(61.1)	553(66.6)	1023(63.9)	0.024
Female	299(38.9)	278(33.4)	577(36.1)	
Religion				
Christianity	525(68.3)	615 (74.0)	1140 (71.3)	0.106*
Islam	227(29.5)	206(24.8)	433(27.1)	
Traditional	11(1.4)	7(0.8)	18(1.1)	
Others	6(0.8)	3(0.4)	9(0.6)	
Ethnic Group				

Yoruba	115(15.0)	45(5.4)	160(10.0)	<0.001
Hausa	32(4.2)	8(1.0)	40(2.5)	
Ibo	35(4.6)	24(2.9)	59(3.7)	
Idoma	31(4.0)	142(17.1)	173(10.8)	
Tiv	282(36.7)	306(36.8)	588(36.8)	
Ebira	115(15.0)	78(9.4)	193(12.1)	
Igala	134(17.4)	193(23.2)	327(20.4)	
Igede	13(1.7)	33(4.0)	46(2.9)	
Others	12(1.6)	2(0.2)	14(0.9)	
Marital Status				
Single	565(73.5)	595(71.6)	1160(72.5)	0.217*
Married	134(17.4)	158(19.0)	292(18.3)	
Co-habiting	52(6.8)	47(5.7)	99(6.2)	
Separated	11(1.4)	10(1.2)	21(1.3)	
Divorced	4(0.5)	13(1.6)	17(1.1)	
Missing	3(0.4)	8(1.0)	11(0.7)	
Level of Education				
Primary	125(16.3)	107(12.9)	232(14.5)	0.001*
Secondary Incomplete	278(36.2)	238(28.6)	516(32.3)	
Secondary Completed	286(37.2)	394(47.4)	680(42.5)	
Tertiary Incomplete	26(3.4)	34(4.1)	60(3.8)	
Tertiary Completed	39(5.1)	43(5.2)	82(5.1)	
Others	9(1.2)	13(1.6)	22(1.4)	
Missing	6(0.8)	2(0.2)	8(0.5)	

*Fischer's exact

4.2 Family and Socio-Economic Characteristics of Respondents

Table 4.2 shows the family and socio-economic characteristics of the respondents. More out of school youths were from monogamous homes 899(56.2%) compared with 667(41.7%) from polygamous homes. Those from monogamous home in the urban area were 439(57.1%)

compared to those from rural area 460(55.4%). Majority of the respondents lived with both parents 437(27.3%) with urban area having 210 (27.3%) and rural area having 227 (27.4%), followed by those that lived with their guardian/relatives which were 309 (19.3%) with urban area 153 (19.9%) and rural area 156 (18.8%); those that lived with their mothers only 227(14.3%) with urban area being 113(14.7%) and rural area being 114(13.7%) and those that lived with the father only were 118(7.4%) with urban area 50(6.5%) and rural area 68(8.2%). About 890(55.6%) of the respondents were employed compared with 692(43.2%) who were not unemployed. More respondents were employed in the rural area 475(57.0%) unlike in the urban area with 415 (54.0%). However, rural unemployment and urban unemployment were similar with rural unemployment being 351 (42.2%) and urban unemployment being 341(44.3%). Majority of respondents were self-employed 483(30.2%) followed by those that were artisans 184(11.5%) such as hair dressers, auto mechanic, barbers and hawkers 117(7.3%). More respondents were self-employed in rural area 267(32.1%) compared to 216(28.1%) in urban area. Interestingly, few out of school youths were farmers and housewives 97(6.1%) and 53(3.3%) respectively. Majority of out of school youths earned nothing per month 424 (26.5%) with urban area 225 (29.3%) and rural area 199(24.0%). This was followed by those that earned less than NGN10,000 (48.90euro) per month which was 403 (25.2%) with urban area 195 (25.4%) and rural area 208 (25.0%). Unfortunately, only few out of school youths 10 (0.6%) earned more than NGN60,000 (292.70euro) per month with urban area 5 (0.7%) and rural area 5 (0.6%). From the wealth index calculation, out of school youths were classified as low, middle and high with 317 (19.8%), 316 (19.6%) and 316 (19.6%) respectively. The household variables used to compute the wealth index had many missing values with high values of 368(47.9%) in urban areas, 283(34.1%) in rural areas and 651(41.0%) in both rural and urban areas. This was a limitation in the wealth index calculation. The family wealth index for low, middle and high socio-economic status was better among respondents in rural area compared to those in urban area. Additionally, out of school youths that have lived five years and more in their community were 1217 (76.1%) with urban area 580 (75.4%) and rural area 637 (76.7%). Out of school youths that lived away from home in one year were 901 (56.3%) with urban area 432 (56.2%) and rural area 469 (56.4%).

Table 4.2: Family and Socio-Economic Characteristics

Variables	Location			P-value
	Urban	**Rural**	**Total**	
	N(%)	**N(%)**	N(%)	
Family type				
Monogamous	439(57.1)	460(55.4)	899(56.2)	0.326
Polygamous	309(40.2)	358(43.1)	667(41.7)	
Missing	21(2.7)	13(1.6)	34(2.1)	
With whom lived with				
Both parents	210(27.3)	227(27.4)	437(27.5)	0.209
Mother only	113(14.7)	114(13.7)	227(14.3)	
Father only	50(6.5)	68(8.2)	118(7.4)	
Guardian/Relative	153(19.9)	156(18.8)	309(19.3)	
Cohabitant Partner	59(7.7)	44(5.3)	103(6.4)	
Husband	50(6.5)	53(6.4)	103(6.4)	
Wife	63(8.2)	93(11.2)	156(9.8)	
Others	62(8.1)	75(9.0)	137(8.6)	
Missing	9(1.2)	1(0.1)	10(0.6)	
Occupation				
Employed	415(54.0)	475(57.0)	890(55.6)	0.296
Unemployed	341(44.3)	351(42.2)	692(43.2)	
Missing	13(1.7)	5(0.6)	18(1.1)	
Main Occupation				
Self Employed	216(28.1)	267(32.1)	483(30.2)	<0.001
Hawkers/Vendors	79(10.3)	38(4.6)	117(7.3)	
Artisan	105(13.7)	78(9.5)	184(11.5)	
Farmer	43(5.6)	54(6.5)	97(6.1)	
Housewife	23(3.0)	30(3.6)	53(3.3)	
Miner	9(1.2)	8(1.0)	17(1.1)	
Others	6(0.8)	24(2.9)	30(1.9)	
Missing	288(37.5)	331(39.8)	619(38.7)	

Average Monthly Income				
<N10,000	195(25.4)	208(25.0)	403(25.2)	0.337
N10,000 – N30,000	154(20.0)	184(22.1)	338(21.1)	
N31,000 – N60,000	39(5.1)	37(4.5)	76(4.8)	
> N60,000	5(0.7)	5(0.6)	10(0.6)	
None	225(29.3)	199(24.0)	424(26.5)	
Missing	151(19.6)	198(23.8)	349(21.8)	
Wealth Index				
Low	144(18.7)	173(20.8)	317(19.8)	0.374
Middle	128(16.6)	188(22.6)	316(19.6)	
High	129(16.8)	187(22.5)	316(19.6)	
Missing	368(47.9)	283(34.1)	651(41.0)	
Length of Time Living in the Village/time				
<5	180(23.4)	172(20.7)	352(22.0)	0.250
≥5	580(75.4)	637(76.7)	1217(76.1)	
Missing	9(1.2)	22(2.7)	31(1.9)	
Mean Length of time	10.9±7.0	11.6±7.2	11.3±7.1	0.051
Away from home				
Yes	432(56.2)	469(56.4)	901(56.3)	0.708
No	333(43.3)	348(41.9)	681(42.6)	
Missing	4(0.5)	14(1.7)	18(1.1)	

4.3: Knowledge of HIV Transmission, Beliefs and Practices

In table 4.3, the number of out of school that have heard about HIV/AIDS were 1504 (94.0%) with more in rural area 788 (94.8%) compared to urban area 716 (93.1%). Substantial number of out of school youths have knowledge about HIV transmission being caused through sexual intercourse, sharing of sharp objects or instrument and blood transfusion with 1506(94.1%), 1430(89.4%) and 1394(87.1%) respectively. Rural areas have more knowledge than urban area with 792 (95.3%) versus 714 (92.9%) about HIV being transmitted through sexual intercourse;

while for sharp object rural area had 762 (91.7%) compared to urban area of 668 (86.9%); and for blood transfusion, rural area had 742 (89.3%) and compared to urban area of 652 (84.8%). Majority of out of school youths believed that HIV/AIDS cannot be cured 979 (61.2%) compared to those that do not know 330 (20.6%) and those that believed that it can be cured 285 (17.8%). The proportion of youths in rural area that believed it cannot be cured was 446 (58.0%) while the proportion of youths in urban area that believed it cannot be cured was 553 (64.1%). Most of the out of school youths did not believe that HIV infected person always look unhealthy with 924 (57.8%), and rural youths having 502 (60.4%) versus 422 (54.8%) among urban youths whereas those that believe that HIV infected person always look unhealthy were 479 (29.9%) with urban youths being 264 (34.3%) versus rural youths 215 (25.9%). Over three quarters of out of school youths believed that condom reduces the risk of HIV infection 1222 (76.4%) with urban area 588 (76.5%) and rural area 634 (76.3%). Out of school youths that have heard of sexually transmitted infections were 1349 (84.3%) with more rural youths 715 (86.0%) compared to urban youths 634 (82.4%). Risk perception of youths contracting HIV or STI infection was 1228 (76.6%) with more rural 630 (75.8%) compared to urban 598 (77.8%).

However, with respondents rating themselves in terms of risk for HIV/STI, 332 (20.8%) rated themselves as high risk for HIV/STI with urban area 154 (20.0%) and rural area 178 (21.4%). Whereas about 748 (46.8%) rated themselves as low risk with urban 317 (41.2%) and rural 431 (51.9%); and about 485 (30.3%) rated themselves with no risk at all with urban area 279 (36.3%) and rural area 206 (24.8%). Out of school youths believed that STIs can be treated mainly in the hospitals 1346 (84.1%) with urban area 653 (84.9%) and rural area 693 (83.4%). Respondents believed that sexually transmitted infections can be prevented through abstaining from sexual intercourse 1502 (93.9%) with urban area 711 (95.2%) and rural area 791 (95.2%); having only one partner at a time 1250 (78.1%) with urban area 571 (74.3%) and rural area 679 (81.7%); and using condom 1366 (85.4%) with urban area 644 (83.8%) and rural area 722 (86.9%). Out of school youths that knew someone living with HIV were 777 (48.6%) with urban area 335 (43.6%) and rural area 505 (60.8%). Out of school youths that knew someone that died of HIV/AIDS were 862 (53.9%) with urban area 357 (46.4%) and rural area 505 (60.8%). Out of school youths that believed that healthy looking person can have HIV were 1183 (73.9%) with urban area 552 (71.8%) and rural area 631 (75.9%).

Table 4.3: Knowledge of HIV Transmission, Beliefs and Practices

Variables	Location			P-value
	Urban N(%)	Rural N(%)	Total N(%)	
Ever Had About HIV/AIDS				
Yes	716(93.1)	788(94.8)	1504(94.0)	0.029
No	26(3.4)	12(1.4)	38(2.4)	
Don't Know	10(1.3)	15(1.8)	25(1.6)	
Missing	17(2.2)	16(1.9)	33(2.1)	
Knowledge About HIV Transmission				
Through Blood Transfusion	652(84.8)	742(89.3)	1394(87.1)	<0.001
Through Sexual Intercourse	714(92.9)	792(95.3)	1506(94.1)	<0.001
Through Sharing of Sharp Objects or instrument	668(86.9)	762(91.7)	1430(89.4)	<0.001
By Shaking Hands With an Infected person	54(7.0)	38(4.6)	92(5.8)	0.100
By eating from the same plate with infected person	49(6.4)	59(7.1)	108(6.8)	0.331
By Sharing Eating Utensils With Infected Person	80(10.4)	67(8.1)	147(9.2)	0.247
Which of the Following Do You Agree With:				
HIV Infection is Possible to be Cured				
Yes	146(19.0)	139(16.7)	285(17.8)	0.039
No	446(58.0)	533(64.1)	979(61.2)	
Don't Know	174(22.6)	156(18.8)	330(20.6)	
Missing	3(0.4)	3(0.4)	6(0.4)	
HIV Infected Person Always Looks Unhealthy				
Yes	264(34.3)	215(25.9)	479(29.9)	0.001
No	422(54.8)	502(60.4)	924(57.8)	
Don't Know	79(10.3)	110(13.2)	189(11.8)	
Missing	4(0.5)	4(0.5)	8(0.5)	
Condom Reduces the Risk of Infection				
Yes	588(76.5)	634(76.3)	1222(76.4)	0.794
No	64(8.3)	62(7.5)	126(7.9)	
Don't Know	113(14.7)	127(15.3)	240(15.0)	
Missing	4(0.5)	8(1.0)	12(0.8)	
Have You Ever Heard of Sexually Transmitted Infections				
Yes	634(82.4)	715(86.0)	1349(84.3)	0.062

No	130(16.9)	113(13.6)	243(15.2)	
Missing	5(0.7)	3(0.4)	8(0.5)	
Are Youths at Risk of Contracting STI or HIV Infections				
Yes	598(77.8)	630(75.8)	1228(76.6)	0.250
No	155(20.2)	188(22.6)	343(21.4)	
Missing	16(2.1)	13(1.6)	29(1.8)	
How Would You Rate Yourself				
High	154(20.0)	178(21.4)	332(20.8)	<0.001
Low	317(41.2)	431(51.9)	748()46.8	
No Risk at all	279(36.3)	206(24.8)	485(30.3)	
Missing	19(2.5)	16(1.9)	35(2.2)	
Which of the Following are Symptoms of STIs in Men				
Genital Discharge	327(42.5)	460(55.4)	787(49.2)	<0.001
Burning Pain in Urination	427(55.5)	558(67.2)	985(61.6)	<0.001
Genital Ulcers/Sores	333(43.3)	455(54.8)	788(49.3	<0.001
Swelling in Groin Area	292(38.0)	410(49.3)	702(43.9)	<0.001
Chest Pain	192(25.0)	241(29.0)	433(27.1)	0.262
Which of the Following are Symptoms of STIs in Women				
Lower Abdominal Pain	354(46.0)	468(56.3)	822(51.4)	<0.001
Genital Discharge	337(43.8)	452(54.4)	789(49.3)	<0.001
Foul Smelling Discharge	340(44.2)	446(53.7)	786(49.1)	0.003
Headaches	204(26.5)	337(40.6)	541(338)	<0.001
Genital Ulcers/Sores	287(37.3)	413(49.7)	700(43.8)	<0.001
Swelling in Groin Area	279(36.3)	388(46.7)	667(41.7)	<0.001
Itching	358(46.6)	479(57.6)	837(52.3)	<0.001
Loss of Appetite	170(22.1)	196(23.6)	366(22.9)	0.294
Painful Sexual Intercourse	285(37.1)	377(45.4)	662(41.4)	0.001
What are Source of Treatment of STIs				
Hospital	653(84.9)	693(83.4)	1346(84.1)	0.303
Traditional Doctor	193(25.1)	222(26.7)	415(25.9)	<0.001
Friends	21(2.7)	19(2.3)	40(2.5)	<0.001
Drug Store/Pharmacy	345(44.9)	390(46.9)	735(45.9)	<0.001

Relative	17(2.2)	28(3.4)	45(2.8)	<0.001
What can be Done to Avoid Sexually Transmitted Infections				
Abstain From Sexual Intercourse	711(92.5)	791(95.2)	1502(93.9)	0.038
Have Only One Partner at a Time	571(74.3)	679(81.7)	1250(78.1)	<0.001
Use Condom	644(83.8)	722(86.9)	1366(85.4)	<0.001
Use Antibiotics	160(20.8)	110(13.2)	270(16.9)	0.001
Rinsing the Vagina/Penis Immediately After Sexual Intercourse	144(18.7)	108(13.0)	252(15.8)	0.008
By Praying	125(16.3)	102(12.3)	227(14.2)	0.090
What Method for Prevention of HIV/AIDS Do You Know				
Don't Know Any Method	45(5.9)	41(4.9)	86(5.4)	0.004
Know One Method	108(14.0)	84(10.1)	192(12.0)	
Know Two Methods	97(12.6)	90(10.8)	187(11.7)	
Know All Three Methods	459(59.7)	585(70.4)	1044(65.3)	
Missing	60(7.8)	31(3.7)	91(5.7)	
Do You Know Someone living with the Virus that Causes HIV or AIDS				
Yes	335(43.6)	442(53.2)	777(48.6)	<0.001
No	427(55.5)	387(46.6)	814(50.9)	
Missing	7(0.9)	2(0.2)	9(0.6)	
Do You Know Someone who Died of AIDS				
Yes	357(46.4)	505(60.8)	862(53.9)	<0.001
No	404(52.5)	324(39.0)	728(45.5)	
Missing	8(1.0)	2(0.2)	10(0.6)	
Is it possible that a Healthy Looking Person Has the Virus that Caused AIDS				
Yes	552(71.8)	631(75.9)	1183(73.9)	0.103
No	203(26.4)	192(23.1)	395(24.7)	
Missing	14(1.8)	8(1.0)	22(1.4)	

*Multiple answers allowed

4.4 Sexual and Reproductive Health Behavior

4.4.1 Have you ever had sexual intercourse in your life?

This question was meant to ascertain how many respondents (out of school youths) that had ever been engaged in sexual relationships in the past. The result showed that a total of 1585 (99.1%) out of school youths responded to the question. Respondents who were sexually experienced during the course of their life recorded as "yes" were 1264 (79.0%) of which the out of school from urban areas were 584 (75.9%) and that of rural areas were 680(81.8%). Those who were not sexually experienced were 321 (20.1%) of which the out of school youths from urban area were 175(22.8%) and rural area were 146 (17.6%).

4.4.2 Are you sexually active?

Though some out of school youths acknowledged the fact that they had experienced sexual intercourse before, not all of them were sexually active (that is engaging in sexual intercourse in the last three months). Out of school youths who responded to the "yes" option showed that 440(57.3%) were in the urban area, 543(65.3%) were in the rural area and a total of 983(61.4%) for both rural and urban areas. Others who responded to the "no" category had 231(30.0%) in the urban area, 194(23.4%) in the rural area and a total of 425(26.6%) in both areas.

4.4.3 Have you ever had sexual intercourse in last 12 months?

Respondents (out of school youths) were also asked if they had sex in the last 12 months. Most out of school youths engaged in sexual intercourse within the 12 months period prior to the time of the study or interview: urban: 486(63.1%); rural: 604(72.7%) and total for both urban and rural areas was 1090(68.1%). On the other hand, out of school youths who within the 12 months period that never had sexual intercourse were fewer: urban: 168(21.9%); rural 120(14.4%) and total (urban and rural) were 288(18.0%).

4.4.4. Number of people with sexual intercourse in the last 12months:

Over the last 12 months from the time of the study, respondents were asked the number of people they had sexual intercourse. Some out of school youths never had sex, some with one person, and others with more than one person. The result showed that those who had sexual intercourse

one person: urban: 240(31.3%), rural: 243(29.2%) and total: 483(30.2%); two persons: urban: 108(14.0%), rural: 154(18.5%) and total: 262(16.3%); with three to five persons – urban was 94(12.2%), rural: 112(13.5%) and total: 206(12.9%), and however, with more than five persons; urban: 77(10.0%), rural: 102(12.3%) and total: 179(11.2%)

4.4.6 Sex in exchange for money:

Respondents were asked if they had sexual intercourse in exchange for money. Out of school youths who engaged in sexual practices in exchange for money were urban: 89(11.6%), rural: 127(15.3%), and total: 216(13.4%). Most out of school youth respondents had not engaged in sexual intercourse in exchange for money with urban: 565(73.4%) rural: 591(71.1%) total: 1156(72.3%).

4.4.7 Ever been forced/coerced into having sexual intercourse?

This question was for female out of school youths. Some of the female respondents might have been forced or coerced into having sexual intercourse. Out of the female out of school youths interviewed, 115 (19.9%) of them have been at one point or the other in life forced or coerced into having sexual intercourse with urban: 58(19.4%) and rural: 57(20.5%). While those that have not been forced or coerced were urban: 193(64.6%) rural: 176(63.3%) total: 369(64.0%).

4.4.8 Ever been assaulted or raped in the past?

This question was also for female out of school youths. Those that have been sexually assaulted or raped were 78(13.5%) of which 33(11.0%) had been raped in the urban area and 45(16.2%) in the rural area.

4.4.9 Have you or your partner ever used a male condom before?

Out of school youths who used or whose partner used condoms previously were assessed. Majority of the respondents acknowledged the use of male condoms: urban: 499(64.9%), rural: 554(66.7%) with both urban and rural areas 1053(65.8%).

4.4.10 Used a female condom or your partner used a female condom with you?

Out of school youths who used or whose partners used a female condom were a total of 172(10.8%) of which out of school youths from urban area were 104(13.5%) and 68(8.2%) from rural area. On the other hand, out of school youths who had never used female condoms previously were a total of 1206(75.4%) out of which 556(72.3%) were from urban area and 650(78.2%) from rural areas.

4.4.11 What is the main reason why you using male condoms?

Out school youths were asked for reasons why they were using condoms, about 719(44.9%) of the respondents used condoms to protect themselves from HIV/STIs and unwanted pregnancy, out of which 316(41.1%) out of school youths were from the urban area and 403(48.5%) were from the rural area. About 269(16.8%) out of school youths used condoms to protect them against HIV/STIs only, where 133(17.3%) out of school youths were from urban area and 136(16.4%) from rural area. Also, 83(5.3%) out of school youths used condoms to prevent unwanted pregnancy only; 41(5.3%) out of school youths were from urban area and 42(5.1%) were from rural area.

4.4.12 Did you use condom during your last sexual intercourse?

Out of school youths that used condom in the last sexual intercourse were 623(38.9%) with 267(34.7%) out of school youths were from urban area and 356(42.8%) were from rural area. Whereas about 596 (37.3%) out of school youths did not use condom during their last sexual intercourse, out of which 293(38.1%) out of school youths were from urban area and 303(36.5%) were from rural area.

4.4.13 If you have ever had sex, with whom did you use condom in your last sexual experience?

Out of school youths who used condoms during their last sexual intercourse with spouses or cohabiting partners were 301(18.8%) out of which 164(21.3%) out of school youths were from urban area and 137(16.5%) were from rural area. Out of school youths who used condoms during their last sexual intercourse with boys/girlfriends were 849(53.1%) out of which 388(50.5%) were from urban area and 461(55.5%) were from rural area. Other respondents who used

condoms during their last sexual intercourse with commercial sex workers were 85(5.3%) out of which 49(6.4%) out of school youths were from urban area and 36(4.4%) were from rural areas. About 149(9.3%) out of school youths used condoms during their last sexual intercourse with casual partners out of which 64(8.3%) out of school youths were from urban area and 85(10.3%) were from rural area.

4.4.14 Have you ever had sex with a casual partner?

Out of school youths were asked if they had ever had sex with a casual partner and 136(17.7%) had sex with causal partner of which 173(20.8%) were from urban area and 309(19.3%) were from rural area. About 1145(71.6%) had not had sex with a casual partner of which 558(72.5%) were from urban area and 587(70.6%) were from rural area.

4.4.15 Have you ever had sex with a female sex worker?

About 173(16.7%) out of school youths had sex with a female sex worker of which 85(18.1%) were from urban area and 86(15.6%) were from rural area. Out of school youths who had never had sexual intercourse with a female sex worker (commercial sex worker) were 764(74.7%), of which the urban area was 339(72.1%) and 425(76.9%) were from rural area.

4.4.16 How often did you use condom during sexual intercourse in the last 12 month?

Out of school youths were asked to know how often they used condoms during sexual intercourse in the last 12 months and the proportion of those who never used condoms or who sometimes used condoms accounted for about 67.2% of the respondents. About 486 (30.4%) out of school youths never used condoms at all during the last 12 months with their sexual partners, 245 (31.9%) of them were from urban area and 241 (29.0%) were from rural area. About 588 (36.8%) respondents used condoms sometimes during the last 12 months, 280 (36.4%) of out of school youths were from urban area and 308 (37.1%) were from rural area. However, 101 (6.3%) out of school youths often used condoms out of which 51 (6.6%) were from urban area and 50 (6.0%) were from rural area. Also, 255 (15.9%) out of school youths used condoms always out of which 102 (13.3%) were from urban area and 153 (18.4%) were from rural area.

4.4.17 With whom do you always use a condom?

Respondents were asked who they always used condoms with; those who used condom with their spouse or cohabiting partner were 254(15.9%), 154(20.0%) of them were from urban area and 100(12.0%) were from rural area. Others that used condoms with their boy/girlfriend were 832(52.0%), of which 354(46.0%) were from urban area and 478(57.5%) were from rural area. Those who used condom with commercial sex worker were 136(8.5%), 68(8.8%) were from urban area and 68(8.2%) were from rural area. Out of school youths who used condom with their casual partner were 212(13.3%), 89(11.6%) were from urban area and 123(14.8%) were from rural area.

4.4.18 What was the age difference?

Age difference between out of school youths and their sexual partners were categorized into five groups. About 372(23.3%) out of school youths acknowledged that their sexual partners were less than five years younger, of which 141(18.3%) were from urban area and 231(27.8%) were from rural area. Those that had sexual intercourse with people that were five years or more years older were 88(5.5%) with 44(5.7%) of them from urban area and 44(5.4%) were from rural area. Out of school youths that had sex with partners about the same age were 203(12.7%) with urban area 93(12.1%) and rural area 110(13.2%). About 274(17.1%) out of school youths that had sex with partners that were less than 10 years, of which 123(16.0%) were from urban area and 151(18.2%) were from rural area. Also, 106(6.6%) out of school youths that had sex with partners that were 10 or more years older, out of which 66(8.6%) were from urban area and 40(4.8%) were from rural area.

4.4.19 Condom Effectively Protect Against Pregnancy

Out of school youths that believed condom can effectively protect against pregnancy were 1328(83.0%) of which 611(79.5%) were from urban area and 717(86.3%) were from rural area. About 99(6.2%) believed condom cannot effectively protect against pregnancy, 58(7.5%) were from urban area and 41(4.9%) were from rural area.

4.4.20 Condom effectively protect against HIV infection

Out of school youths who believed that condoms can effectively protect against HIV infection were 1259(78.7%), out of which 580(75.4%) were from urban area and 679(81.7%) were from rural area. On the other hand, 146(9.1%) out of school youths disagreed that condoms can effectively protect against HIV infection, out of which 77(10.0%) were from urban area and 69(8.3%) were from rural area.

4.4.21 Condom can disappear inside woman's body

Out of school youths that believed that condom could disappear inside a woman's body were 164(10.3%), of which 71(9.3%) were from urban area and 93(11.2%) were from rural area. On the other hand, 944(59.0%) out of school youths believed that condom could not disappear inside a woman's body, of these 443(57.6%) were from urban area and 501(60.3%) were from rural area.

4.4.22 Condom effectively protect against STIs

Out of school youths were also asked if condom can effectively protect against STIs, 1205(75.3%) of the respondents said that it could, 544(70.7%) of the youths were from urban area and 661(79.5%) were from rural area. About 148(9.3%) other respondents said that condom could not effectively protect against STIs, 85(11.1%) of these respondent were from urban area and 63(7.6%) were from rural area.

4.4.23 Condom can be used more than once

Out of school youths who said that condoms can be used more than once were 125(7.8%), of which 68(8.8%) were from urban area and 57(6.9%) were from rural area. About 1067(66.7%) out of school youths disagreed that condom can be used more than once, 488(63.5%) of them were from urban area and 579(69.7%) were from rural area.

4.4.24 Condom can be purchased from pharmacy, clinic, or hospital

Respondents who agreed that condom can be purchased from pharmacy, clinic, or hospitals were 1378(86.1%), among them 646(84.0%) were from urban area and 732(88.1%) were from rural area. Out of school youths who disagreed that condom could be purchased from pharmacy,

clinic, or hospital were 31(1.9%), 14(1.9%) of them were from urban area and 17(2.0%) were from rural area.

4.4.25 Condom Reduces Sexual Enjoyment

Out of school youths who believed that condoms reduces sexual enjoyment were 882(55.1%), 398(51.8%) of these youths were from urban area and 484(58.2%) were from rural area. Some other youths believed that condom does not reduce sexual enjoyment, a total of 163(10.2%), 74(9.6%) from urban area and 89(10.7%) were from rural area.

4.4.26 Do you agree or disagree that male condoms are easy to obtain

The above question wanted to ascertain the ease at which out of school youths obtained condoms. About 1211(75.7%) indicated that male condoms were easy to obtain**,** 555(72.1%) of the respondents were from urban area and 656(78.9%) were from rural area. About 67(4.2%) others disagreed that male condoms were easy to obtain, 30(3.9%) of them were from urban area and 37(4.5%) were from rural area.

4.4.27 Do you agree or disagree that male condoms break often during sexual intercourse

Out of school youths were also asked if male condoms could break often during sexual intercourse, 1010(63.1%) out of school youths agreed that male condoms could break often during sexual intercourse, 466(60.6%) of them were from urban area and 544(65.5%) were from rural area. About 175(10.9%) respondents disagreed that male condoms break often during sexual intercourse, 65(8.5%) of them were from urban area and 110(13.2%) were from rural area.

4.4.28 Would you say male condoms are affordable?

Out of school youths that believed that male condom was affordable were 1162(72.6%) of which 550(71.5%) of the respondents were from urban area and 612(73.7%) were from rural area. However, 54(3.4%) out of school youths said that condoms were not affordable, 23(3.0%) of the respondents were from urban area and 31(3.7%) were from rural area.

4.4.29 Suppose you wanted to buy a male condom and some people were in the store, would you?

Youths may sometimes find it difficult buying condoms especially in the presence of people. About 282(17.6%) out of school youths said they will wait and buy it some other time, out of which 153(19.9%) were from the urban area and 129(15.5%) were from the rural area. Also, 294(18.4%) out of school youths will try to hide the fact that you were buying condom, among which 120(15.6%) were from urban area and 174(20.9%) were from rural area. Then, 859(53.7%) out of school youths said they will buy the condom without hiding, out of which 407(52.9%) were from urban area and 452(54.4%) were from rural area.

4.4.30 Reason why you stop using male condom

Out of school youths were asked why they stopped using condoms, 390(24.4%) of them said they did not enjoy using condoms out of which 183(23.8%) were from the urban area and 207(24.9%) were rural area. About 197(12.4%) out of school youths stopped using condoms because they wanted a child, of these 98(12.7%) were from urban area and 99(11.9%) were from rural area. Also, 151(9.4%) out of school youths indicated that their partners opposed to condom use, of which 65(8.5%) were from urban area and 86(10.4%) were from rural area. About 78(4.9%) out of school youths gave religious reasons for stopping condom usage, out of which 39(5.1%) were from urban areas and 39(4.7%) were from rural areas.

Table 4.4: Sexual and Reproductive Health Behaviors

Variables	Location			P-value
	Urban N(%)	Rural N(%)	Total N(%)	
Have You Ever Had Sexual Intercourse in Your Life				
Yes	584(75.9)	680(81.8)	1264(79.0)	0.008
No	175(22.8)	146(17.6)	321(20.1)	
Missing	10(1.3)	5(0.6)	15(0.9)	
Are You Sexually Active				
Yes	440(57.3)	543(65.3)	983(61.4)	0.001
No	231(30.0)	194(23.4)	425(26.6)	
Missing	98(12.7)	94(11.3)	192(12.0)	
Have You Ever Had Sexual Intercourse in Last 12 Months Prior to this Survey				
Yes	486(63.1)	604(72.7)	1090(68.1)	<0.001
No	168(21.9)	120(14.4)	288(18.0)	
Missing	115(15.0)	107(12.9)	222(13.9)	
When was the Last Time You Had Sexual Intercourse				
Never Had Sexual Intercourse	84(10.9)	54(6.5)	138(8.6)	0.839
Had Sex (mean days)	3.5±4.2	3.0±2.9	3.3±3.6	0.190
Had Sex (mean weeks)	2.2±1.2	2.0±1.6	2.1±1.4	0.169
Had Sex (mean months)	4.0±3.3	3.5±3.1	3.7±3.2	0.184
Had Sex (mean years)	2.8±2.9	3.1±2.6	2.9±2.8	0.485
How Old Were You When You First Had Sexual intercourse				
Mean years	16.0±2.8	16.4±2.7	16.2±2.8	<0.001
Never Had Sexual Intercourse				
Yes	57(7.4)	28(3.4)	85(5.3)	0.001
No	10(1.3)	21(2.5)	31(1.9)	
Missing	702(91.3)	782(94.1)	1484(92.8)	
Number of people with sexual intercourse in the last 12months				
Never had sex	120(15.6)	86(10.4)	206(12.9)	0.003
1 Person	240(31.3)	243(29.2)	483(30.2)	
2 Persons	108(14.0)	154(18.5)	262(16.3)	
3-5Persons	94(12.2)	112(13.5)	206(12.9)	

>5Persons	77(10.0)	102(12.3)	179(11.2)	
Missing	130(16.9)	134(16.1)	264(16.5)	
Sex in Exchange For Money				
Yes	89(11.6)	127(15.3)	216(13.4)	0.038
No	565(73.4)	591(71.1)	1156(72.3)	
Missing	115(15.0)	113(13.6)	228(14.3)	
Ever Been Force/Coerced into Having Sexual Intercourse				
Yes	58(19.4)	57(20.5)	115(19.9)	0.726
No	193(64.6)	176(63.3)	369(64.0)	
Missing	48(16.1)	45(16.2)	93(16.1)	
Ever been Assaulted or Raped in the Past				
Yes	33(11.0)	45(16.2)	78(13.5)	0.032
No	209(69.9)	167(60.1)	376(65.2)	
Missing	57(19.1)	66(23.7)	123(21.3)	
Have You or Your Partner Ever Used a Male Condom Before				
Yes	499(64.9)	554(66.7)	1053(65.8)	0.887
No	191(24.8)	209(25.2)	400(25.0)	
Don't know	28(3.7)	35(4.1)	63(3.9)	
Missing	51(6.6)	33(4.0)	84(5.3)	
Used a Female/partner used a female condom with you				
Yes	104(13.5)	68(8.2)	172(10.8)	<0.001
No	556(72.3)	650(78.2)	1206(75.4)	
Don't know	40(5.2)	64(7.7)	104(6.4)	
Missing	69(9.0)	49(5.9)	118(7.4)	
When was the last time you used a female male /partner used a female condom with you				
Mean (months)	5.3±8.3	10.6±18.7	7.5±13.8	0.031
How long you started using male condom for the first time				
Mean months	22.7±23.8	28.6±20.1	26.2±21.9	0.014
What is the Main Reason Why You Using Male Condoms				
To Protect Against HIV/STIs	133(17.3)	136(16.4)	269(16.8)	0.413
To Prevent Unwanted Pregnancy	41(5.3)	42(5.1)	83(5.3)	
To Protect Yourself From Both HIV/STIs and Unwanted Pregnancy	316(41.1)	403(48.5)	719(44.9)	
Others	12(1.6)	14(1.7)	26(1.6)	

Missing	267(34.7)	236(28.3)	503(31.4)	
Did You Use Condom During Your Last Sexual Intercourse				
Never had Sexual Intercourse	144(18.7)	111(13.4)	255(15.9)	0.001
Yes	267(34.7)	356(42.8)	623(38.9)	
No	293(38.1)	303(36.5)	596(37.3)	
Missing	65(8.5)	61(7.3)	126(7.9)	
If You have Ever had Sex, With Whom Did You Use Condom in Your Last Sexual Experience				
Spouse or Cohabiting Partner				
Yes	164(21.3)	137(16.5)	301(18.8)	0.021
No	386(50.2)	440(53.0)	826(51.6)	
Missing	219(28.5)	254(30.6)	473(29.6)	
Boy/Girlfriend				
Yes	388(50.5)	461(55.5)	849(53.1)	<0.001
No	234(30.4)	171(20.5)	405(25.3)	
Missing	147(19.1)	199(24.0)	346(21.6)	
Commercial Sex Worker				
Yes	49(6.4)	36(4.4)	85(5.3)	0.146
No	473(61.5)	484(58.2)	957(59.8)	
Missing	247(32.1)	311(37.4)	558(34.9)	
Casual Partner				
Yes	64(8.3)	85(10.3)	149(9.3)	0.027
No	463(60.2)	415(49.9)	878(54.9)	
Missing	242(31.5)	331(39.8)	573(35.8)	
Have You Ever Had Sex With a Casual Partner				
Yes	136(17.7)	173(20.8)	309(19.3)	0.140
No	558(72.5)	587(70.6)	1145(71.6)	
Missing	75(9.8)	71(8.6)	146(9.1)	
How Many Times Have You Had Sex With a casual partner in the last 3 months				
Mean	2.9±2.3	3.0±2.8	3.0±2.6	0.686
Have You Ever Had Sex With a Female Sex Worker				
Yes	85(18.1)	86(15.6)	171(16.7)	0.205
No	339(72.1)	425(76.9)	764(74.7)	
Missing	46(9.8)	42(7.6)	88(8.6)	

How Many Times Have You Had Sex With a female Sex Worker in the Last 3 Month				
Mean	3.0±2.7	4.0±3.5	3.4±3.1	0.075
How Often did You use Condom During Sexual Intercourse in the Last 12 Month				
Never	245(31.9)	241(29.0)	486(30.4)	0.051
Sometimes	280(36.4)	308(37.1)	588(36.8)	
Often	51(6.6)	50(6.0)	101(6.3)	
Always	102(13.3)	153(18.4)	255(15.9)	
Missing	91(11.8)	79(9.5)	170(10.6)	
With whom Do You Always Use a Condom				
Spouse or Cohabiting Partner	154(20.0)	100(12.0)	254(15.9)	<0.001
Boy/Girlfriend	354(46.0)	478(57.5)	832(52.0)	<0.001
Commercial Sex Workers	68(8.8)	68(8.2)	136(8.5)	<0.001
Casual Partner	89(11.6)	123(14.8)	212(13.3)	<0.001
Missing	242(13.6)	331(7.5)	573(10.3)	
What was the Age Difference				
Less Than 5 Years Younger	141(18.3)	231(27.8)	372(23.3)	<0.001
5 years or more years Younger	44(5.7)	44(5.4)	88(5.5)	
About the Same Age	93(12.1)	110(13.2)	203(12.7)	
Less Than 10 Years Older	123(16.0)	151(18.2)	274(17.1)	
10 or More Years Older	66(8.6)	40(4.8)	106(6.6)	
Don't Know the Difference	96(12.5)	66(7.9)	162(10.1)	
Missing	206(26.8)	189(22.7)	395(24.7)	
How Many Sexual Partner Do You Currently Have Including Casual And Commercial Partners				
Spouse or Cohabiting Partners (mean)	1.6±1.1	1.4±0.8	1.5±1.0	0.053
Commercial Sex Workers (mean)	1.8±1.2	1.9±1.6	1.9±1.4	0.499
Casual Partners (mean)	2.1±1.4	2.3±1.6	2.2±1.5	0.239
Condom Effectively Protect Against Pregnancy				
Yes	611(79.5)	717(86.3)	1328(83.0)	0.014
No	58(7.5)	41(4.9)	99(6.2)	
No response	80(10.4)	68(8.2)	148(9.2)	
Missing	20(2.6)	5(0.6)	25(1.6)	

Condom Effectively Protect Against HIV Infection				
Yes	580(75.4)	679(81.7)	1259(78.7)	0.029
No	77(10.0)	69(8.3)	146(9.1)	
No response	94(12.2)	75(9.0)	169(10.6)	
Missing	18(2.4)	8(1.0)	26(1.6)	
Condom Can Disappear Inside Woman's Body				
Yes	71(9.3)	93(11.2)	164(10.3)	0.227
No	443(57.6)	501(60.3)	944(59.0)	
No response	227(29.5)	222(26.7)	449(28.0)	
Missing	28(3.6)	15(1.8)	43(2.7)	
Condom Effectively Protect Against STIs				
Yes	544(70.7)	661(79.5)	1205(75.3)	0.003
No	85(11.1)	63(7.6)	148(9.3)	
No response	109(14.2)	93(11.2)	202(12.6)	
Missing	31(4.0)	14(1.7)	45(2.8)	
Condom Can Be Used More than Once				
Yes	68(8.8)	57(6.9)	125(7.8)	0.120
No	488(63.5)	579(69.7)	1067(66.7)	
No response	177(23.0)	181(21.8)	358(22.4)	
Missing	36(4.7)	14(1.6)	50(3.1)	
Condom Can Be Purchased from Pharmacy, Clinic, or Hospital				
Yes	646(84.0)	732(88.1)	1378(86.1)	0.144
No	14(1.9)	17(2.0)	31(1.9)	
No response	88(11.4)	72(8.7)	160(10.1)	
Missing	21(2.7)	10(1.2)	31(1.9)	
Condom Reduces Sexual Enjoyment				
Yes	398(51.8)	484(58.2)	882(55.1)	0.046
No	74(9.6)	89(10.7)	163(10.2)	
No response	267(34.7)	248(29.8)	515(32.2)	
Missing	30(3.9)	10(1.3)	40(2.5)	
Do You Agree or Disagree that Male Condoms are Easy to Obtain				
Yes	555(72.1)	656(78.9)	1211(75.7)	0.077
No	30(3.9)	37(4.5)	67(4.2)	

No response	149(19.4)	131(15.8)	280(17.5)	
Missing	35(4.6)	7(0.8)	42(2.6)	
Do You Agree or Disagree that Male Condoms Break Often During Sexual Intercourse				
Yes	466(60.6)	544(65.5)	1010(63.1)	0.001
No	65(8.5)	110(13.2)	175(10.9)	
No response	200(26.0)	171(20.6)	371(23.2)	
Missing	38(4.9)	6(0.7)	44(2.8)	
Would You Say Male Condoms are Affordable				
Yes	550(71.5)	612(73.7)	1162(72.6)	0.333
No	23(3.0)	31(3.7)	54(3.4)	
Don't Know	165(21.5)	157(18.9)	322(20.1)	
Missing	31(4.0)	31(3.7)	62(3.9)	
Suppose You wanted to Buy a Male Condom and Some People Were in the Store, Would you……				
Wait and buy it Some Other Time	153(19.9)	129(15.5)	282(17.6)	0.005
Try to Hide the Fact that You Were Buying Condom	120(15.6)	174(20.9)	294(18.4)	
Buy the Condom without Hiding	407(52.9)	452(54.4)	859(53.7)	
Missing	89(11.6)	76(9.2)	165(10.3)	
Reason Why you Stop using Male Condom				
Did not enjoy using condoms	183(23.8)	207(24.9)	390(24.4)	0.326
Wanted a Child	98(12.7)	99(11.9)	197(12.4)	
Partner opposed	65(8.5)	86(10.4)	151(9.4)	
Religious reason	39(5.1)	39(4.7)	78(4.9)	
Others	34(4.4)	50(6.0)	84(5.3)	
Missing	350(45.5)	347(41.8)	697(43.6)	

4.5 HIV Associated Risk Factors

4.5.1 Have you ever smoked cigarettes?

Out of school youths were asked if they had ever smoked cigarettes. About 369(23.0%) had ever smoked cigarettes with 151 (19.6%) in urban area and 218(26.2%) in rural area.

4.5.2 Do you currently smoke cigarettes?

Out of school youths who were currently smoking cigarettes at the time of the interview were 218(13.6%), of which 101(13.2%) were from urban area and 117(14.3%) were from rural area.
Out of school youths who never smoked in the past 30 days were 497(31.1%), of which 288(37.5%) were from urban area and 209(25.2%) were from rural area.

4.5.3 Other types of tobacco currently smoked apart from cigarette

Out of school youths were also found to be using other types of tobacco apart from cigarettes. Some of the respondents were using pipe 56(3.5%), 27(3.5%) of them were from urban area and 29(3.5%) were from rural area. About 62(3.8%) out of school youths chewed tobacco, of which 25(3.2%) were from urban area and 37(4.5%) were from rural area. Also, 153(9.6%) out of school youths were involved in snuffing, of which 63(8.2%) were from urban area and 90(10.8%) were from the rural area.

4.5.4 Have you tried taking alcohol?

About 801(50.1%) out of school youths had tried taking alcohol, 350(45.5%) were from urban area and 451(54.3%) were from the rural area. Also, 707(44.2%) out of school youths that never tried taking alcohol, 379(49.3%) were from urban area and 328(39.5%) were from the rural area.

4.5.5 In the last 30days how many times did you have at least a drink of alcohol?

Out of school youths that never had at least a drink of alcohol were 251(15.7%), among these 123(16.0%) were from urban area and 128(15.4%) were from the rural area. Also, 198(12.4%) out of school youths did not have a drink in the last 30 days, of which 79(10.3%) of them were from urban area and 119(14.3%) were from the rural area.

4.5.6 In the last 30days how often have you had drinks containing alcohol?

Information was collected among out of school youths that had drinks containing alcohol within the 30days of the interview. Among out of school youths that had alcohol everyday 148(9.3%), of which 62(8.1%) were from urban area and 86(10.4%) were from the rural area. Those that had alcohol at least once a week 232(14.5%) of which 114(14.8%) were from urban area and 118(14.2%) were from the rural area. Less than once a week were 173(10.8%), of which 62(8.1%) were from urban area and 111(13.4%) were from rural area. Those that never had alcohol were 343(21.3%), of which 200(26.0%) were from urban area and 143(17.2%) were from the rural area.

4.5.7 In the last 30days, how many bottles of alcohol do you take in row?

Out of school youths that have never had alcohol previously were 406(25.4%), of which 238(31.0%) of them were from urban area and 168(20.2%) were from the rural area. While respondents that had never taken more than one bottle in a row were 193(12.0%), out of which 78(10.1%) were from urban area and 115(13.9%) were from the rural area.

4.5.8 During your lifetime how many times have you had hangover

Out of school youths that never had hangover before were 833(52.1%) of which 425(55.3%) were from the urban area and 408(49.1%) were from the rural area. About 219(13.7%) had hangover one or two times of which 86(11.2%) of these respondents were from urban area and 133(16.0%) were from the rural area. About 96(6.0%) out of school youths had hangover three to nine times in their lifetime, 37(4.8%) of these respondents were from urban area and 59(7.1%) were from the rural area. Also, 76(4.8%) out of school youths said they had hangover 10 or more times in their lifetime, 41(5.3%) of these respondents were from urban area and 35(4.2%) were from the rural area.

4.5.9 During your life time how many times have you used drugs?

Out of school youths were also asked during their lifetime, how many times they had used drugs most of the respondents had never used drugs before 1367(85.4%), of which 645(83.9%) of the respondents were from urban area and 722(86.9%) were from rural area. About 38(2.4%) out of schools had used drugs one or two times, of which 16(2.1%) of these respondents were from

urban area and 22(2.6%) were from rural area. About 79(4.9%) out of school youths had used drugs three to nine times, of which 40(5.2%) were from urban area and 39(4.7%) were from the rural area. Also, 54(3.4%) of respondents had used 10 or more times, of which 31(4.0%) of these respondents were from urban area and 23(2.8%) were from the rural area.

4.5.10 Which have you tried?

Out of school youths were asked if they had ever used marijuana, glue, paint, cocaine, or heroin before. About 138(8.6%) out of school youths admitted to using marijuana, 67(8.7%) of them were from the urban area and 71(8.5%) were from the rural area. About 16(1.0%) out of school youths had tried glue, of which 11(1.4%) were from urban area and 5(0.6%) were from rural area. Paints were also used by 13(0.8%) out of school youths, 9(1.2%) of them were from urban area and 4(0.5%) were from rural area. Also, 37(2.2%) respondents have tried cocaine, 18(2.4%) out of school youths who have tried cocaine were from the urban area and 19(2.3%) were from the rural area. Similarly, 31(1.9%) respondents had tried heroin, of which 15(2.0%) were from the urban area and 16(1.9%) from the rural area.

4.5.11 In the last 12 months have you injected cocaine or heroin using syringe?

Out of school youths were asked if in the last 12 months of the interview, they had injected cocaine or heroin using syringe (that is for those who are using such drugs). About 59(3.7%) out of school youths who had tried those drugs acknowledged injecting cocaine or heroin using syringes, 27(3.5%) of them were from urban area and 32(3.9%) were from the rural area.

4.5.12 In the past 30 days, how often did your parents understand your problem?

Some parents do not understand that drug use is a problem to some youths. Out of school youths that believed parents never understood were 964(60.3%) of which 496(64.5%) were from urban area and 468(56.3%) were from rural area. About 115(7.2%) out of school youths believed their parents rarely understood their problems, of which 51(6.6%) of them were from urban area and 64(7.7%) were from rural area. About 98(6.1%) out of school youths believed that their parents sometimes understood their problems, 42(5.5%) of them were from urban area and 56(6.7%) were from the rural area. Also, 57(3.6%) out of school youths believed that their parents understood most of the time about their problems, 20(2.6%) of them were from urban area and

37(4.5%) were from the rural area. About 39(2.4%) out of school youths believed that their parents always understood their problems, 17(2.2%) of them were from urban area and 22(2.7%) were from rural area.

4.5.13 Youths should be encouraged to talk freely about their sex life

Out of school youths who were of the opinion that youth should be encouraged to talk freely about their sex life, those that believed that opinion were 1104(69.0%), of which 535(69.6%) of them were from urban area and 569(68.5%) were from rural area. About 312(19.5%) out of school youths believed that youths should not be encouraged to talk freely about their sex life, 116(15.0%) of them were from urban area and 196(23.6%) were from rural area.

4.5.14 Early sex exposures encourage the risk of STI

Out of school youths were asked if they believed that early sex exposures encourage the risk of STI, 1330(83.1%) of them believed that, of which 625(81.3%) were from urban area and 705(84.8%) were from rural area. Also, 97(6.1%) did not believe that opinion, 43(5.6%) were from urban area and 54(6.5%) were from rural area.

4.5.15 Sex education should be taught only in the house

Out of school youths who felt that sex education should be taught only in the house were 560(35.0%), of which 270(35.1%) were from urban area and 290(34.9%) were from the rural area. Also, 858(53.6%) out of school youths that believed sex education should not be taught only in the house, of which 380(49.4%) were from urban area and 478(57.5%) were from rural area.

4.5.16 Sex education goes against religious beliefs

Out of school youths who thought sex education goes against religious beliefs were 831(51.9%), of which 342(44.5%) were from urban area and 489(58.8%) were from the rural area. About 463(28.9%) out of school youths did not believe sex education goes against religious beliefs, of which 240(31.2%) were from urban area and 223(26.8%) were from the rural area.

4.5.17 Parent's beliefs and values can help delay early sex

Out of school youths who believed that parent's beliefs and values can help delay early sexual debut were 1181(73.8%), out of which 521(67.8%) were from urban area and 660(79.4%) were from the rural area. On the other hand, out of school youths who thought parent's beliefs and values cannot help delay early sex were 151(9.4%), out of which 89(11.5%) were from urban area and 62(7.5%) were from the rural area.

4.5.18 Undue exposure to sexual practice from electronic media makes one to want sexual relationship

Most out of school youths agree that undue exposure to sexual practice from electronic media makes one to want sexual relationship, they were 1248(78.0%), of which 550(71.5%) were from urban area and 698(84.0%) were from the rural area. Few 173(10.8%) out of school youths disagreed that undue exposure to sexual practice from electronic media makes one to want sexual relationship, of these 100(13.0%) were from urban area and 73(8.8%) were from the rural area.

4.5.19 Peer influence can approve one-night stand

Out of school youths who agree with the notion that peer influence can approve one-night stand were 1289(80.6%), out of which 596(77.5%) were from urban area and 693(83.4%) were from the rural area. Out of school youths who disagreed that peer influence can approve one-night stand were 266(16.6%), out of which 143(18.6%) were from urban area and 123(14.8%) were from the rural area.

4.5.20 Peers can transfer wrong information about sexual intercourse

Peers can transfer wrong information about sexual intercourse and 1356(84.8%) out of school youths agreed with that, 633(82.3%) of those respondents were from urban area and 723(87.0%) were from the rural area. On the other hand, out of school youths who thought otherwise were 208(13.0%), out of which 112(14.6%) were from urban area and 96(11.6%) were from the rural area.

4.5.21 If you don't have sex before marriage, you are not mature

Out of school youths that believed that "if you don't have sex before marriage, you are not mature" were 865(54.1%) of which 356(46.3%) were from urban area and 509(61.2%) were from the rural area. About 691(43.1%) did not believe that, among which 383(49.8%) were from urban area and 308(37.1%) were from the rural area.

4.5.22 Are you circumcised?

Out of school male youths who were circumcised were 968(60.5%), of which 432(56.1%) were from urban area and 536(64.5%) were from the rural area. About 424(26.5%) male youths were not circumcised, out of which 222(28.9%) were from urban area and 202(24.3%) were from the rural area.

4.5.23 Have you ever had oral sex?

Out of school youths were also asked if they had oral sex, a total of 388(24.3%) ever had oral sex of which 196(25.5%) were from urban area and 192(23.1%) were from the rural area. About 1188(74.3%) out of school youths never had oral sex, 564(73.3%) of them were from urban area and 624(75.1%) were from the rural area.

4.5.24 Have you ever had anal sex before?

Anal sex is not a common practice among out of school youths in this study as only 213(13.3%) acknowledged practicing anal sex, out of which 103(13.4%) were from urban area and 110(13.2%) were from the rural area. On the other hand, 1359(84.9%) out of school youths have never had anal sex before, 653(84.9%) of them were from urban area and 706(85.0%) were from the rural area.

4.5.25 Have you ever been tested for HIV before?

When asked if they have ever been tested for HIV before, 848(53.0%) out of school youths had been previously tested for HIV of which 397(51.6%) were from urban area and 451(54.2%) were from the rural area. About 736(46.0%) respondents had not been previously tested with 364(47.3%) of them from urban area and 372(44.8%) from the rural area.

4.5.26 Do you know places you can get tested?

Majority of out of school youths knew where to get HIV test with 1146(71.6%) in both rural and urban areas, 517(67.2%) from urban area and 629(75.7%) from the rural area. About 439(27.5%) out of school youths did not know where to be tested, 247(32.1%) were from urban area and 192(23.1%) were from the rural area.

4.5.27 If you had an opportunity to be tested for HIV, would you be willing

Out of school youths were asked if they will undertake HIV testing if given the opportunity to be tested and 1440(90.0%) indicated willingness, of which urban area was 684(89.0%) and rural area was 756(91.0%). About 141(8.8%) out of school youths would not be willing if they had an opportunity to be tested for HIV, out of which 75(9.8%) were from urban area and 66(7.9%) were from the rural area.

4.5.28 HIV test result

HIV testing was undertaken among out of school youths. A total of 77(5.2%) were reactive, out of which 46(6.5%) were from urban area and 31(4.1%) were from the rural area. About 1398(94.8%) out of school youths were non-reactive, out of which 665(93.5%) were from urban area and 733(95.9%) were from the rural area. Refusal for HIV testing was 125 (7.8%) with urban 58 (7.5%) and rural 67 (8.1%).

Table 4.5: HIV Associated Risk Factors

Variables	Location			P-value
	Urban N(%)	Rural N(%)	Total N(%)	
Have you ever smoked cigarettes				
Yes	151(19.6)	218(26.2)	369(23.0)	0.002
No	601(78.2)	595(71.6)	1196(74.8)	
Missing	17(2.2)	18(2.2)	35(2.2)	
Do you currently smoke cigarettes				
Yes	101(13.2)	117(14.3)	218(13.6)	0.450
No	507(65.9)	517(62.2)	1024(64.0)	
Missing	161(20.9)	195(23.5)	356(22.4)	
How old were you when you first smoked for the first time				
Mean years	13.6±6.8	16.4±4.3	15.1±5.8	<0.001
How many days did you smoke in the past 30 days				
Never smoked	288(37.5)	209(25.2)	497(31.1)	<0.001
Did not smoke in the last 30 days	40(5.1)	81(9.7)	121(7.5)	
Missing	441(57.4)	541(65.1)	982(61.4)	
Mean days	20.9±11.8	18.5±12.3	19.6±12.1	0.171
In the past 24 hours, how many cigarettes did you smoke				
Mean number	6.1±5.3	5.3±5.2	5.7±5.2	0.282
Other types of tobacco currently smoked apart from cigarette				
Pipe				
Yes	27(3.5)	29(3.5)	56(3.5)	0.839
No	559(72.7)	568(68.4)	1127(70.4)	
Missing	183(23.8)	234(28.1)	417(26.1)	
Chewing tobacco				
Yes	25(3.2)	37(4.5)	62(3.8)	0.151
No	561(73.0)	568(68.4)	1129(70.6)	
Missing	183(23.8)	226(27.1)	409(25.6)	

Snuff				
Yes	63(8.2)	90(10.8)	153(9.6)	0.034
No	533(69.3)	526(63.3)	1059(66.1)	
Missing	173(22.5)	215(25.9)	388(24.3)	
Have you tried taking alcohol				
Yes	350(45.5)	451(54.3)	801(50.1)	<0.001
No	379(49.3)	328(39.5)	707(44.2)	
Missing	40(5.2)	52(6.2)	92(5.7)	
How old where you when you started taking alcohol				
Mean years	16.2±3.8	16.2±3.8	16.2±3.8	0.788
In the last 30days how many times did you have at least a drink of alcohol				
Never had a drink of alcohol	123(16.0)	128(15.4)	251(15.7)	0.054
Did not have a drink in the last 30 days	79(10.3)	119(14.3)	198(12.4)	
Missing	567(73.7)	584(70.3)	1151(71.9)	
Mean days	9.8±10.8	9.6±10.5	9.7±10.6	0.787
In the last 30days how often have you had drinks containing alcohol				
Everyday	62(8.1)	86(10.4)	148(9.3)	<0.001
At least once a week	114(14.8)	118(14.2)	232(14.5)	
Less than once a week	62(8.1)	111(13.4)	173(10.8)	
Never	200(26.0)	143(17.2)	343(21.3)	
Not sure	60 (7.8)	95(11.4)	155(9.7)	
No response	50(6.5)	55(6.6)	105(6.6)	
Missing	221(28.7)	223(26.8)	444(27.8)	
How many bottles of alcohol do you take in a day				
Never had alcohol	209(27.2)	173(20.8)	382(23.9)	0.001
Never had a drink of alcohol other than a few sips	68(8.8)	105(12.6)	173(10.8)	
Missing	492(64.0)	553(66.6)	1045(65.3)	
Mean number of bottles	2.7±2.3	2.7±2.2	2.7±2.2	0.871
In the last 30days, how many bottles of alcohol do you take in row				
Never had alcohol	238(31.0)	168(20.2)	406(25.4)	<0.001
Never taken more than one bottle in a row	78(10.1)	115(13.9)	193(12.0)	

Missing	453(58.9)	548(65.9)	1001(62.6)	
Mean number of bottles	3.9±4.6	5.0±13.4	4.5±10.4	0.221
During your lifetime how many time have you had hangover				
None	425(55.3)	408(49.1)	833(52.1)	0.003
1 or 2 times	86(11.2)	133(16.0)	219(13.7)	
3 to 9 times	37(4.8)	59(7.1)	96(6.0)	
10 or more times	41(5.3)	35(4.2)	76(4.8)	
Missing	180(23.4)	196(23.6)	376(23.4)	
During your life time how many times have you used drugs				
None	645(83.9)	722(86.9)	1367(85.4)	0.403
1 or 2 times	16(2.1)	22(2.6)	38(2.4)	
3 to 9 times	40(5.2)	39(4.7)	79(4.9)	
10 or more times	31(4.0)	23(2.8)	54(3.4)	
Missing	37(4.8)	25(3.0)	62(3.9)	
Which have you tried				
Marijuana				
Yes	67(8.7)	71(8.5)	138(8.6)	<0.001*
No	365(47.5)	439(52.8)	804(50.2)	
No response	23(3.0)	2(0.3)	25(1.6)	
Missing	314(40.8)	319(38.4)	633(39.6)	
Glue				
Yes	11(1.4)	5(0.6)	16(1.0)	<0.001
No	414(53.8)	483(58.1)	897(56.1)	
No response	26(3.4)	3(0.4)	29(1.8)	
Missing	318(41.4)	340(40.9)	658(41.1)	
Paint				
Yes	9(1.2)	4(0.5)	13(0.8)	<0.001*
No	414(53.8)	481(57.9)	895(55.9)	
No response	27(3.5)	2(0.2)	29(1.8)	
Missing	319(41.5)	344(41.4)	663(41.5)	
Cocaine				
Yes	18(2.4)	19(2.3)	37(2.2)	<0.001*

No	404(52.5)	472(56.8)	876(54.8)	
No response	28(3.6)	2(0.2)	30(1.9)	
Missing	319(41.5)	338(40.7)	657(41.1)	
Heroin				
Yes	15(2.0)	16(1.9)	31(1.9)	<0.001*
No	406(52.8)	476(57.3)	882(55.1)	
No response	29(3.8)	1(0.1)	30(1.9)	
Missing	319(41.4)	338(40.7)	657(41.1)	
In the last 12 months have you injected cocaine or heroin using syringe				
Yes	27(3.5)	32(3.9)	59(3.7)	0.773
No	442(57.5)	569(68.5)	1011(63.2)	
No response	33(4.3)	36(4.2)	69(4.3)	
Missing	267(34.7)	194(23.4)	461(28.8)	
In the past 30 days, how often did your parents understand your problem				
Never	496(64.5)	468(56.3)	964(60.3)	0.047
Rarely	51(6.6)	64(7.7)	115(7.2)	
Sometimes	42(5.5)	56(6.7)	98(6.1)	
Most of the time	20(2.6)	37(4.5)	57(3.6)	
Always	17(2.2)	22(2.7)	39(2.4)	
Missing	143(18.6)	184(22.1)	327(20.4)	
Youths should be encouraged to talk freely about their sex life				
Yes	535(69.6)	569(68.5)	1104(69.0)	<0.001
No	116(15.0)	196(23.6)	312(19.5)	
Don't know	95(12.4)	54(6.5)	149(9.3)	
Missing	23(3.0)	12(1.4)	35(2.2)	
Early sex exposures encourage the risk of STI				
Yes	625(81.3)	705(84.8)	1330(83.1)	0.084
No	43(5.6)	54(6.5)	97(6.1)	
Don't know	80(10.4)	62(7.5)	142(8.9)	
Missing	21(2.7)	10(1.2)	31(1.9)	
Sex education should be taught only in the house				

Yes	270(35.1)	290(34.9)	560(35.0)	<0.001
No	380(49.4)	478(57.5)	858(53.6)	
Don't know	100(13.0)	52(6.3)	152(9.5)	
Missing	19(2.5)	11(1.3)	30(1.9)	
Sex education goes against religious beliefs				
Yes	342(44.5)	489(58.8)	831(51.9)	<0.001
No	240(31.2)	223(26.8)	463(28.9)	
Don't know	159(20.7)	106(12.8)	265(16.6)	
Missing	28(3.6)	13(1.6)	41(2.6)	
Parents beliefs and values can help delay early sex				
Yes	521(67.8)	660(79.4)	1181(73.8)	<0.001
No	89(11.5)	62(7.5)	151(9.4)	
Don't know	122(15.9)	89(10.7)	211(13.2)	
Missing	37(4.8)	20(2.4)	57(3.6)	
Undue exposure to sexual practice from electronic media makes one to want sexual relationship				
Yes	550(71.5)	698(84.0)	1248(78.0)	<0.001
No	100(13.0)	73(8.8)	173(10.8)	
Don't know	84(10.9)	46(5.5)	130(8.1)	
Missing	35(4.6)	14(1.7)	49(3.1)	
Peer influence can approve one-night stand				
Yes	596(77.5)	693(83.4)	1289(80.6)	0.025
No	143(18.6)	123(14.8)	266(16.6)	
Missing	30(3.9)	15(1.8)	45(2.8)	
Peers can transfer wrong information about sexual intercourse				
Yes	633(82.3)	723(87.0)	1356(84.8)	0.054
No	112(14.6)	96(11.6)	208(13.0)	
Missing	24(3.1)	12(1.4)	36(2.2)	
If you don't have sex before marriage, you are not mature				
Yes	356(46.3)	509(61.2)	865(54.1)	<0.001
No	383(49.8)	308(37.1)	691(43.1)	
Missing	30(3.9)	14(1.7)	44(2.8)	

Are you circumcised				
Yes	432(56.1)	536(64.5)	968(60.5)	0.008
No	222(28.9)	202(24.3)	424(26.5)	
Missing	115(15.0)	93(11.2)	208(13.0)	
Have you ever had oral sex				
Yes	196(25.5)	192(23.1)	388(24.3)	0.298
No	564(73.3)	624(75.1)	1188(74.3)	
Missing	9(1.2)	15(1.8)	24(1.4)	
Have you ever had anal sex before				
Yes	103(13.4)	110(13.2)	213(13.3)	0.934
No	653(84.9)	706(85.0)	1359(84.9)	
Missing	13(1.7)	15(1.8)	28(1.8)	
Have you ever been tested for HIV before				
Yes	397(51.6)	451(54.2)	848(53.0)	0.294
No	364(47.3)	372(44.8)	736(46.0)	
Missing	8(1.1)	8(1.0)	16(1.0)	
Do you know places you can get tested				
Yes	517(67.2)	629(75.7)	1146(71.6)	<0.001
No	247(32.1)	192(23.1)	439(27.5)	
Missing	5(0.7)	10(1.2)	15(0.9)	
If you had an opportunity to be tested for HIV, would you be willing				
Yes	684(89.0)	756(91.0)	1440(90.0)	0.197
No	75(9.8)	66(7.9)	141(8.8)	
Missing	10(1.2)	9(1.1)	19(1.2)	
HIV Test Result				
Reactive	46(6.5)	31(4.1)	77(5.2)	
Non-reactive	665(93.5)	733(95.9)	1398(94.8)	

*Fischer's exact

4.6 Comparison of HIV Prevalence between this study and other national studies

A complete case analysis of the three databases (out of school youth study, 2007 NARHS and 2012 NARHS) was done based on only those that tested for HIV in the three studies.

In this study, out of the 711 that tested for HIV in the urban area 46 (6.5%) were HIV infected, and out of the 764 that tested for HIV in the rural area, 31(4.1%) were HIV infected. The total HIV prevalence for North Central Nigeria, was 77(5.2%) out of the 1475 that got tested for HIV. The HIV test refusal rates in Benue, Kogi and North Central Nigeria were 16(2.0%); 109(13.6%); and 125(7.8%) respectively.

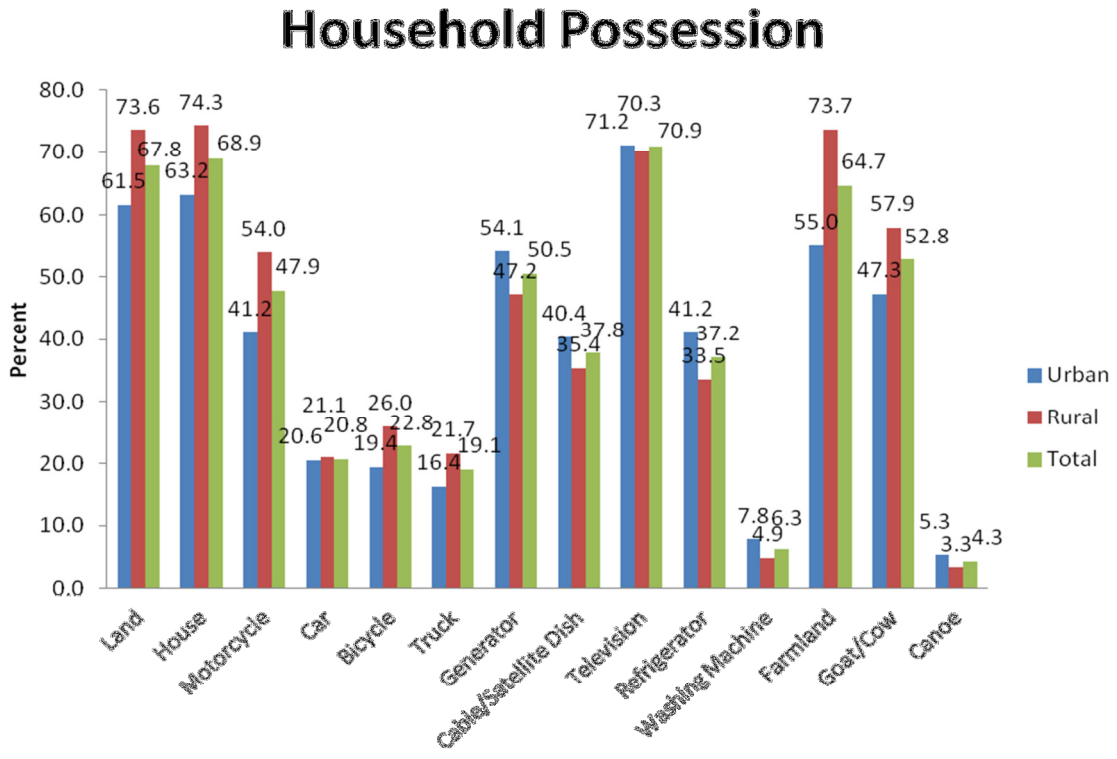
The two national surveys were not primarily directed to youths or out of school youths but to the general populations aged 15 – 49years in women and 15 – 64years in men. The sample sizes for youths (aged 15 – 24yeas) in the 2007 NARHS were 123 for Benue state and 84 for Kogi states. While the sample sizes for youths (aged 15 – 24yeas) in the 2012 NARHS were 277 for Benue state and 227 for Kogi state. This study had larger sample sizes of 784 for Benue state and 691 for Kogi state. The analysis of the three studies excluded those that refused HIV testing.

HIV prevalence in Benue state in 2007 NARHS and 2012 NARHS were 8(6.5%) and 5(1.8%) respectively; whereas in this out of school youth study, HIV prevalence for Benue state was 27(3.4%). HIV prevalence in Kogi state in 2007 NARHS and 2012 NARHS were 1(1.2%) and 2(0.9%) respectively; whereas in this out of school study, HIV prevalence for Kogi state was 50(7.2%).

Table 4.6 Comparative Trend Analysis of HIV Prevalence between the Study and NARHS

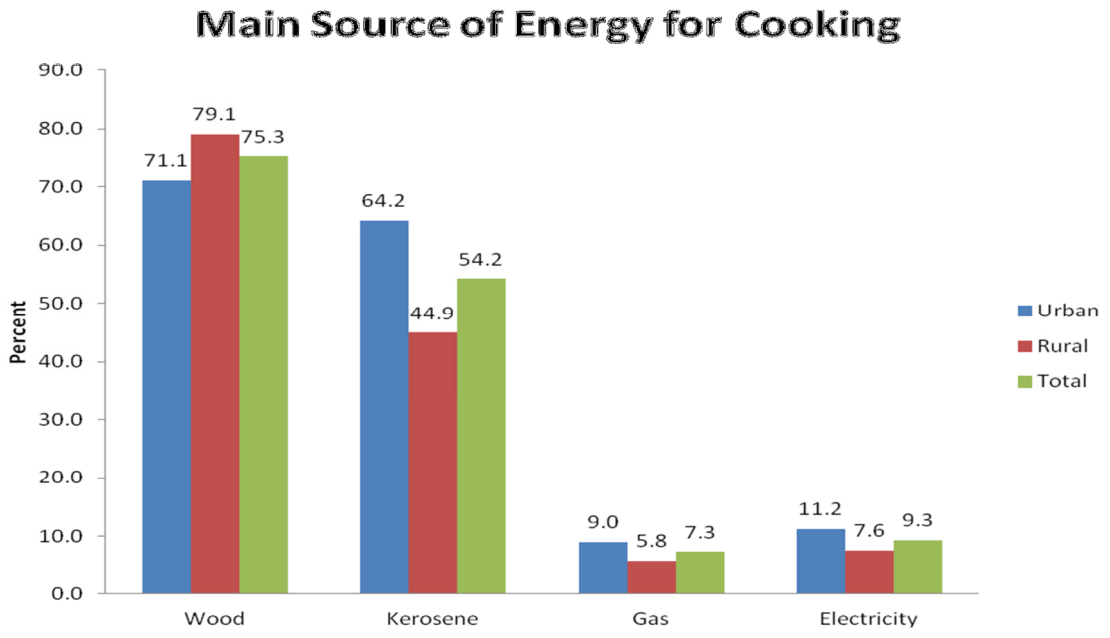
Studies	States	Sample size	Urban HIV Prevalence N(%)	Rural HIV Prevalence N(%)	Total Prevalence N(%)
NARHS 2007	Benue	**123** (urban 36 and rural 87)	4(11.1)	4(4.6)	8(6.5)
	Kogi	**84** (urban 29 and 55)	0	2(1.7)	2(0.9)
NARHS 2012	Benue	**277** (urban 13 and rural 264)	1(7.7)	4(1.5)	5(1.8)
	Kogi	**227** (urban 117 and rural 109)	2(1.7)	0	2(0.9)
2013/2014	Benue	**784** (urban 307 and rural 477)	12(3.9)	15(3.1)	27(3.4)
Out of School	Kogi	**691** (urban 404 and rural 287)	34(8.4)	16(5.6)	50(7.2)
Youth Study					

Figure 4.1: Household Possessions of Respondents Family Assets



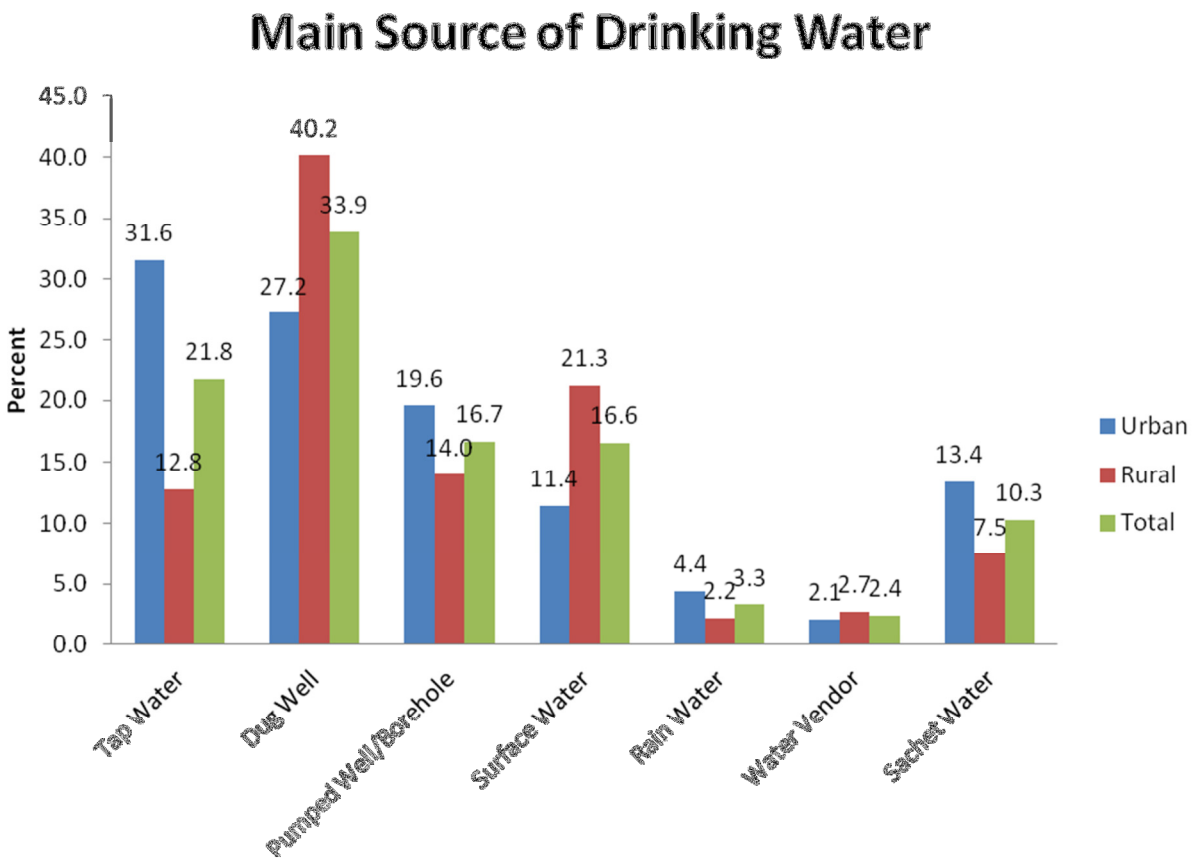
In the figure 4.1 above, the family wealth index of the respondents was collected on household items. Wealth index is a proxy measure of wealth which is constructed from household assets/possessions and amenities.(33) Out of school youths who indicated that their household possessed television were (urban 71.2%; rural 70.3% and total 70.9%); those that indicated that their families have lands or landed properties were (urban: 61.5%; rural: 73.6%; total of both: 67.8%), out of school youths with household having houses were (urban: 63.2%; rural: 74.3%; total of both:68.9%) and farmland (urban: 55.0%; rural: 73.7%; total of both: 64.7%)], out of school youths who had goat/cow livestock were (urban: 47.3%; rural: 57.9 %; total of both: 52.8%). Out of school youths who had automobiles/mechanized means of transportation were motorcycle (urban: 41.2%; rural: 54.0%; total of both: 47.9%), car (urban: 20.6%; rural: 21.1%; total of both: 20.8%), bicycle (urban: 19.4%; rural: 26.0%; total of both: 22.8%), and truck (urban: 16.4%; rural: 21.7%; total of both: 19.1%)]; other local means of transportation included canoe (urban: 5.3%; rural: 3.3%; total of both: 4.3%) which happens to be the least in terms of possession. Others possessions included generator (urban: 54.1%; rural: 47.2%; total of both: 50.5%), cable/satellite dish (urban: 40.4%; rural: 35.4%; total of both: 37.8%), television (urban: 71.2%; rural: 70.3%; total of both: 70.9%), refrigerator (urban: 41.2%; rural: 33.5%; total of both: 37.2%), washing machine (urban: 4.8%; rural: 7.9%; total of both: 6.3%).

Figure 4.2: Main Source of Energy for Cooking



In the figure 4.2 above, the wood (urban: 71.1%; rural: 79.1%; total of both: 75.3%), is the main source of energy for cooking in both urban and rural areas, kerosene stove (urban: 4.4%; rural: 2.2%; total of both: 3.3%) which also has a very high utilization after wood. Electric stove (urban: 4.4%; rural: 2.2%; total of both: 3.3%) on the other hand has a very low usage and gas (urban: 4.4%; rural: 2.2%; total of both: 3.3%) has the lowest usage in both urban and rural areas. Despite Nigeria having a large reserve of natural gas, out of school youths come from household with wood as the prominent source of cooking energy with gas having the least as a source of cooking energy.

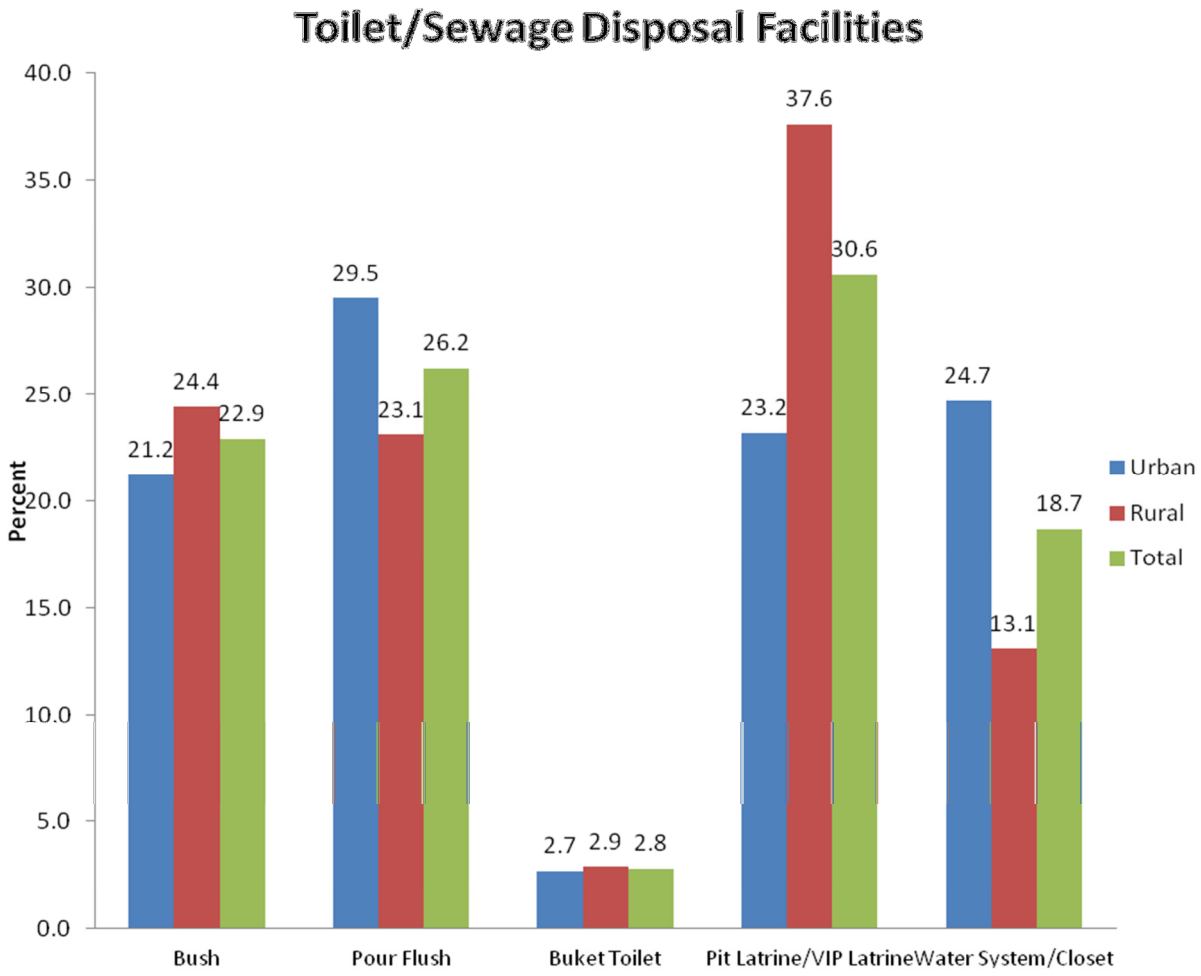
Figure 4.3: Main Source of Drinking Water



In the figure 4.3 above, the major source of drinking water in the rural area was the dug well (urban: 27.2%; rural: 40.2%; total of both: 33.9%), while buying water from vendors (urban: 2.1%; rural: 2.7%; total of both: 2.4%) and obtaining rain water (urban: 4.4%; rural: 2.2%; total of both: 3.3%) were the least sources of drinking water in households. Both tap water (urban:

31.6%; rural: 12.8%; total of both: 21.8%) and dug well were commonly used in the urban areas; although tap water was the most common source of drinking water in the urban area, dug well was the most common source of drinking water in the rural area. Other sources of drinking water include borehole (urban: 19.6%; rural: 14.0%; total of both: 16.7%) and surface water (urban: 11.4%; rural: 21.3%; total of both: 16.6%) and sachet water (urban: 13.4%; rural: 7.5%; total of both: 10.3%) was fairly used in both areas. This finding has shown that rain water and water from vendor were the least sources of driving water.

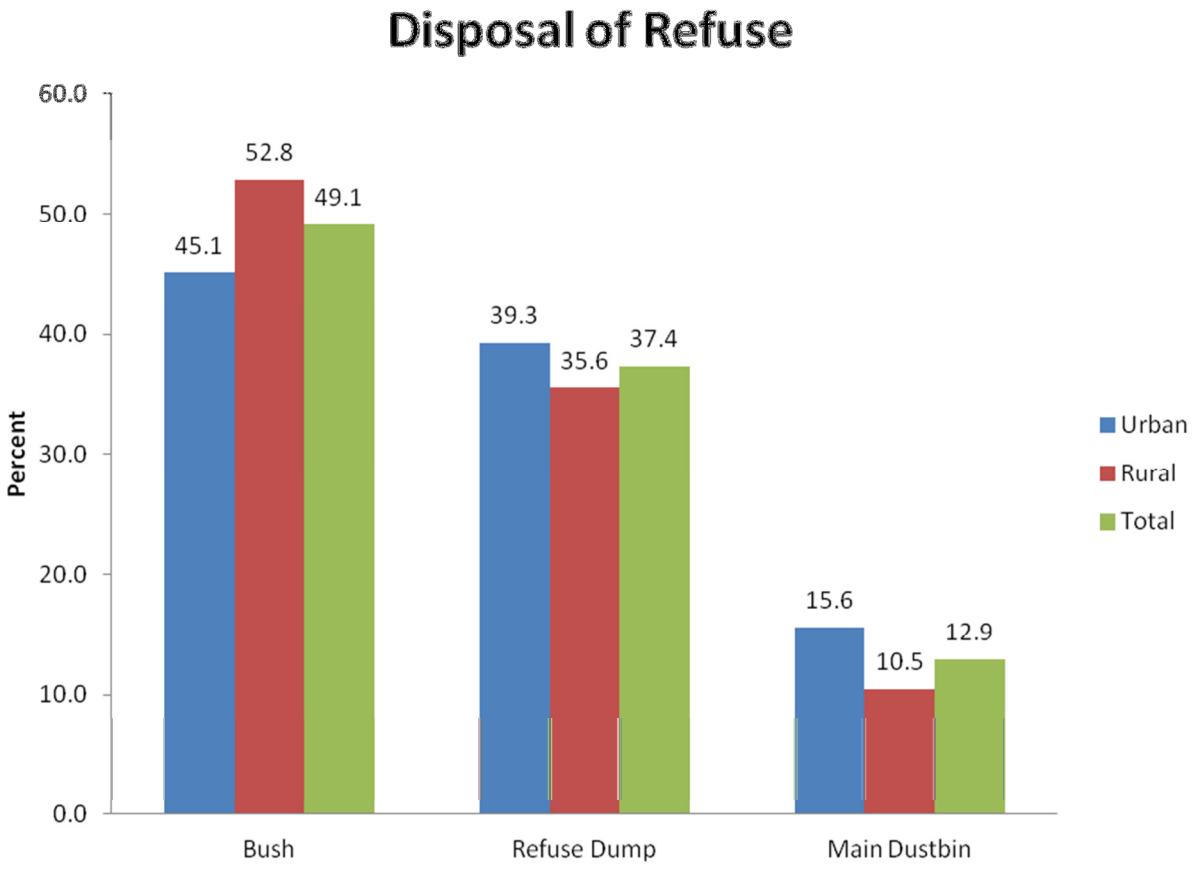
Figure 4.4: Types of Toilets/ Sewage Disposal Facilities



In the figure 4.4 above, pit latrine/VIP latrine were the most widely used sewage disposal facility especially in the rural area (urban: 23.2%; rural: 37.6%; total of both: 30.6%), followed by pour flush which was the commonest in the urban area (urban: 29.5%; rural: 23.1%; total of both:

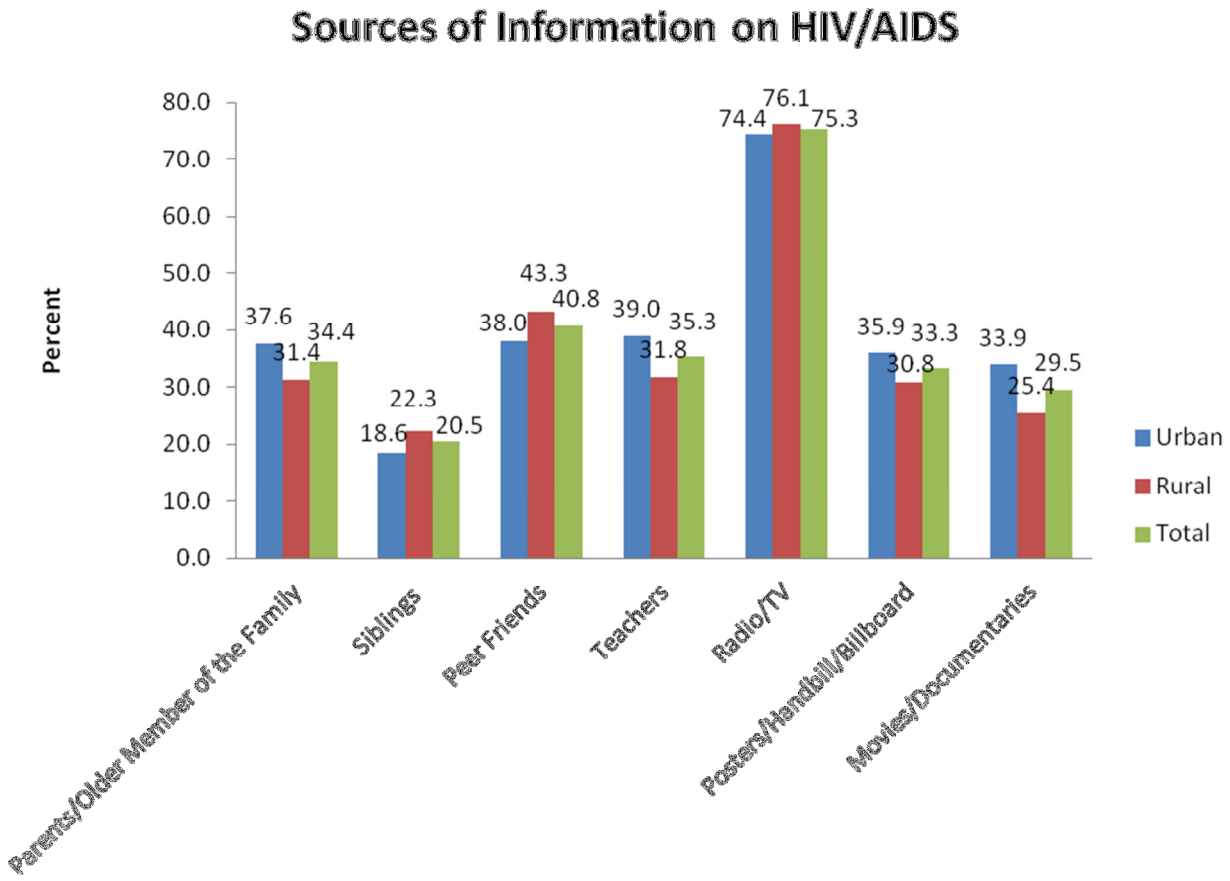
26.2%). Invariably, bucket toilet was the least used sewage disposal facility both in the urban and rural areas (urban: 2.7%; rural: 2.9%; total of both: 2.8%). Other sewage disposal methods that were used were bush (urban 21.2%; rural 24.4% and total 22.9%) and water system/closet (urban 24.7%; rural 13.1%; 18.7%). On the overall, bush, pour flush, pit-latrine or VIP-latrine, and water systems sewage disposal facilities were much used by the households of out of school youths in the study.

Figure 4.5: Methods of Refuse Disposal



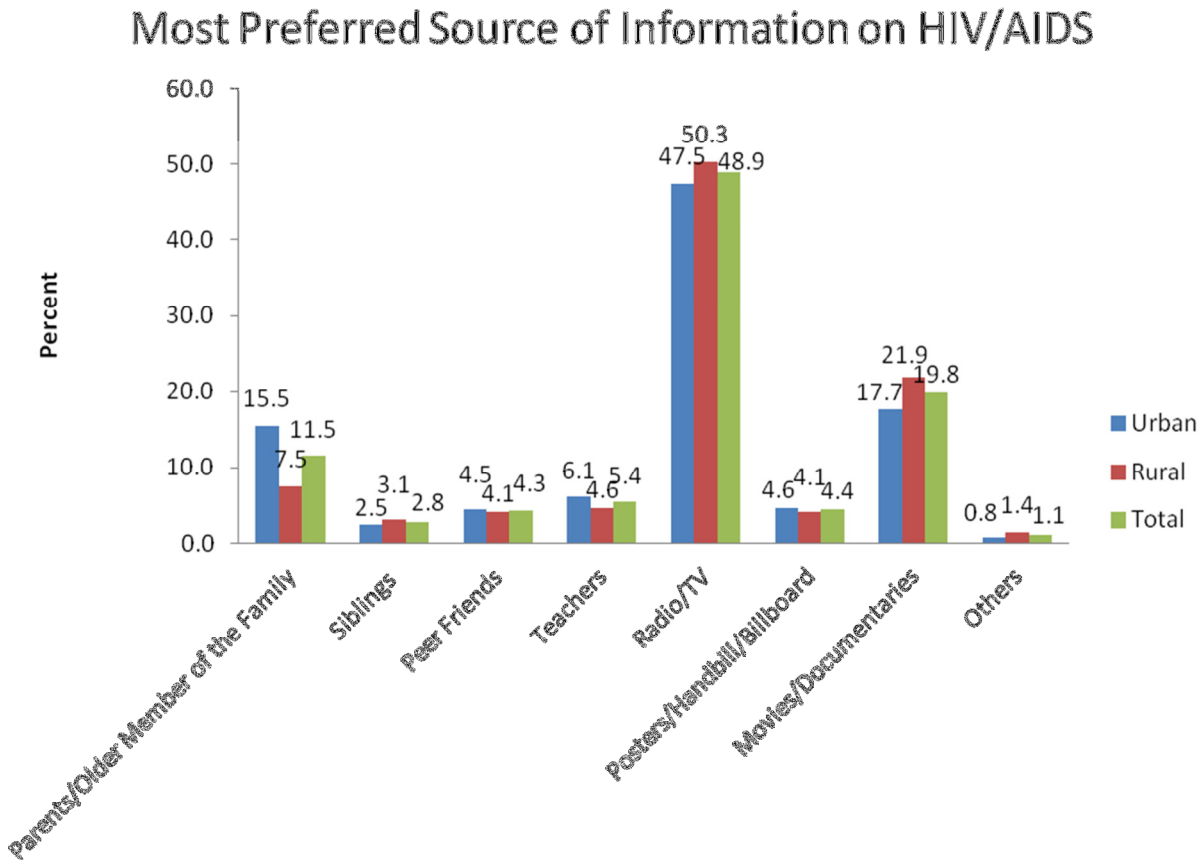
The figure 4.5 above shows the distribution of refuse disposal methods in the urban and rural areas of the out of school youths in the study. Bushes (urban: 45.1%; rural: 58.2%; total of both: 49.1%) were the most commonly used method of disposing refuse, this was followed by refuse dump (urban: 39.3%; rural: 35.6%; total of both: 37.4%). Main dustbin (urban: 15.6%; rural: 10.5%; total of both: 12.9%) was the least used method of refuse disposal both in the urban and rural areas

Figure 4.6: Sources of Information on HIV/AIDS



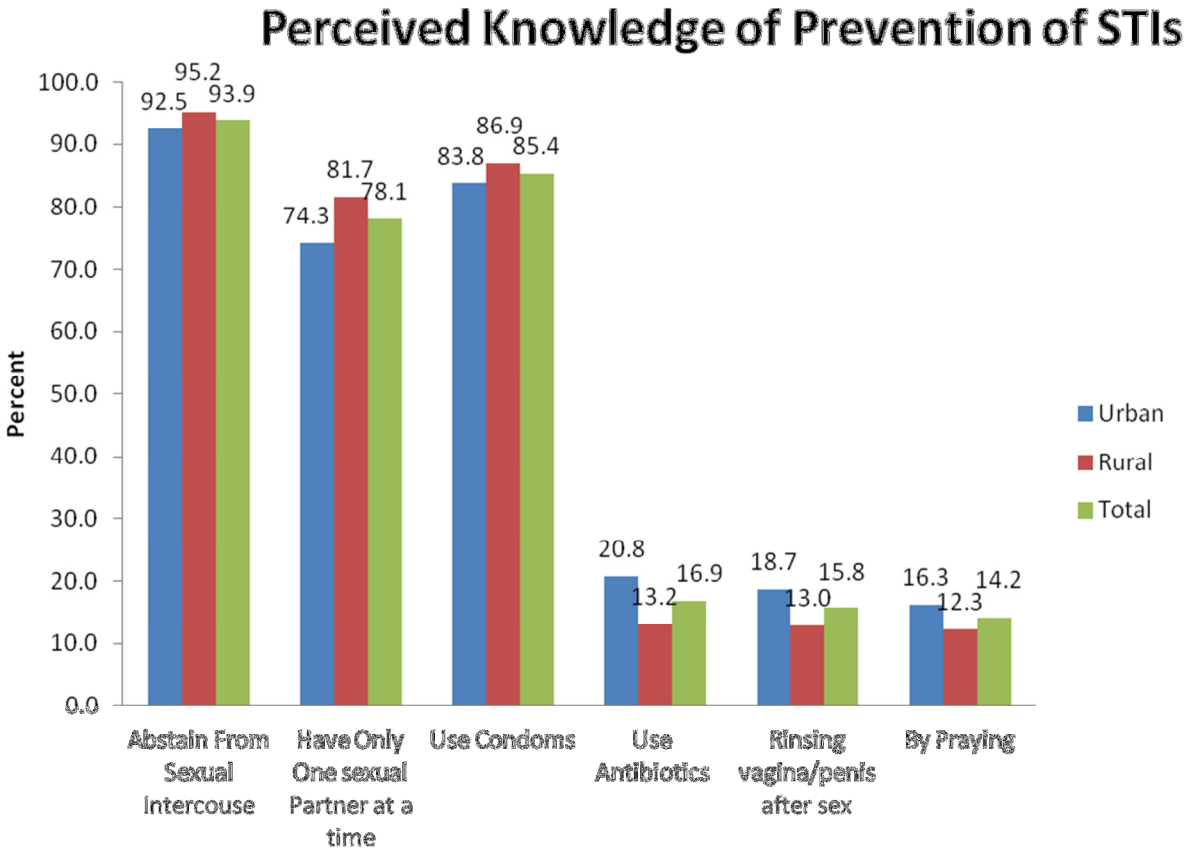
In the figure 4.6 above, sources of information on HIV/AIDS were categorized into seven basic types, out of school youths were asked to respond to their sources of information on HIV/AIDS. The radio/TV (urban: 74.4%; rural: 76.1%; total of both: 75.3%) were the commonest source of information on HIV/AIDS. Other categories which includes; parents/older member of the family (urban: 37.6%; rural: 31.4%; total of both: 34.4%), siblings (urban: 18.6%; rural: 22.3%; total of both: 20.5%), peer friends (urban: 38.0%; rural: 43.3%; total of both: 40.8%), teachers (when they were last in school) as source of information were (urban: 39.0%; rural: 31.8%; total of both: 35.3%), whereas posters/handbill/billboard (urban: 35.9%; rural: 30.8%; total of both: 33.3%) and movies/documentaries (urban: 33.9%; rural: 25.4%; total of both: 29.5%) were similar sources of information.

Figure 4.7: Most Preferred Source of Information on HIV/AIDS



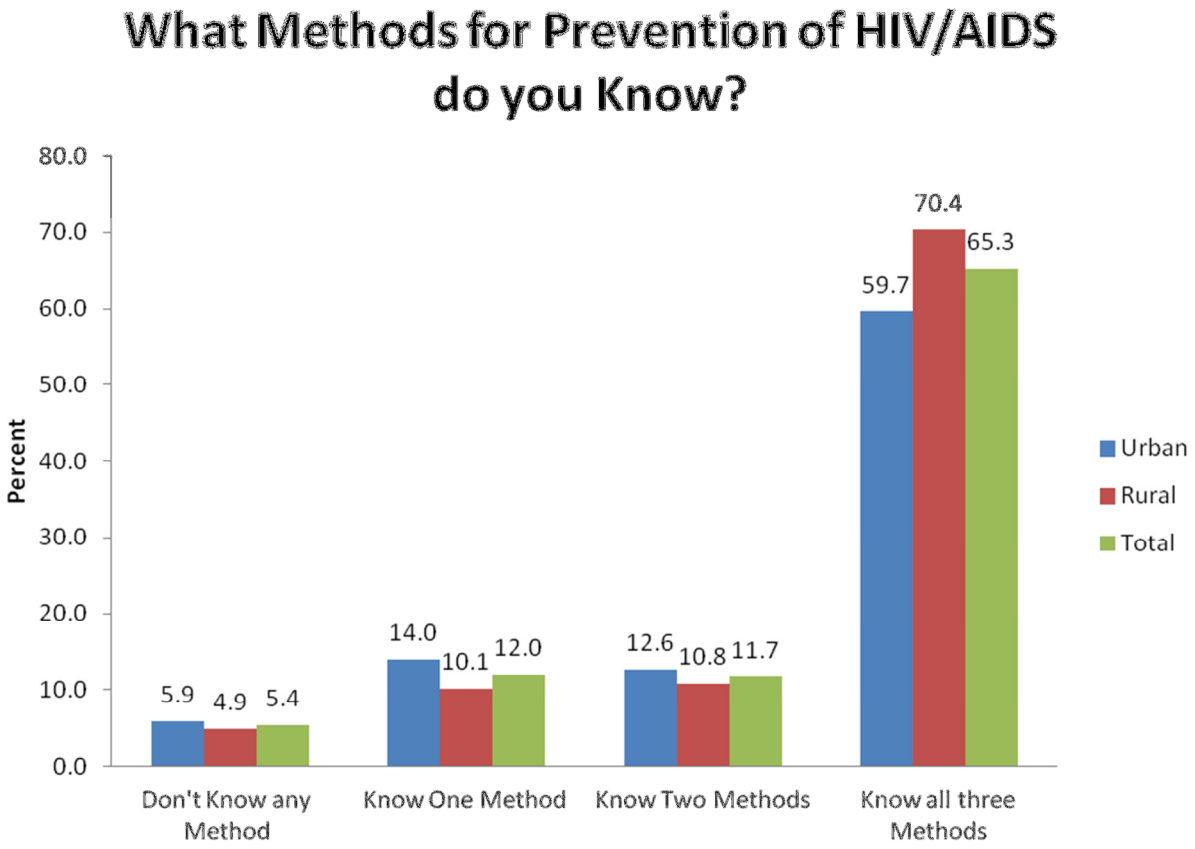
In the figure 4.7 above, the most preferred source of information was radio/TV (urban 47.5%; rural 50.3% and a total of 48.9%); this was followed by movies/documentaries (urban 17.7%; rural 21.9% and total of both 19.8%) and parents/older member of the family (urban 15.5%; rural 7.5%; and a total of 11.5%), and other sources of information which were siblings and peer friends were total for both urban and rural areas 2.8% and 4.3% respectively. Other sources of information were posters/handbill/billboard (urban: 4.6%; rural: 4.1%; total of both: 4.4%). Finally, out of school youths in the "other" category were (urban: 0.8%; rural: 1.4%; total of both: 1.1%). This "other" category included information sources such as the village town criers, place of worship (church or mosque), health facilities and health care givers.

Figure 4.8: Perceived Knowledge of STI Preventions



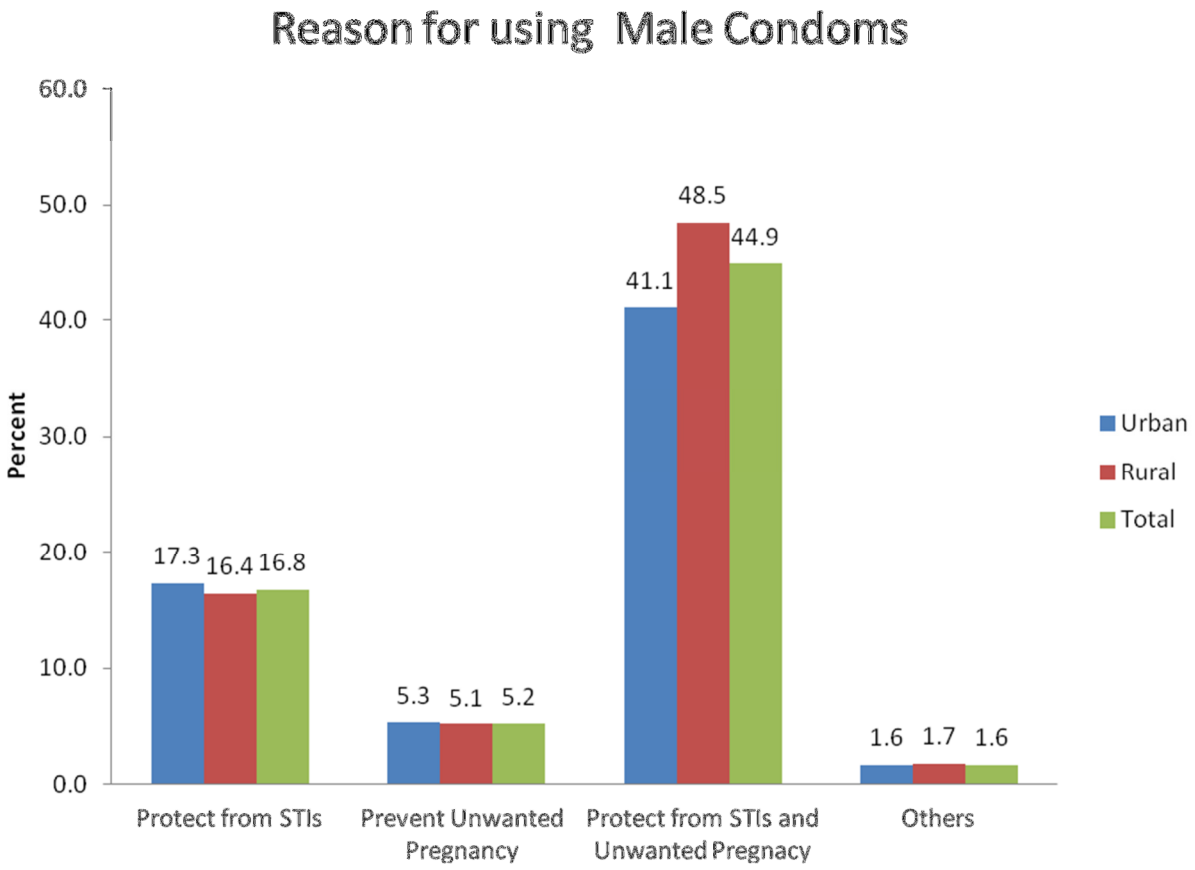
In the figure 4.8 above, the graph shows the percentage of respondents who had knowledge of preventive methods of STI infection. Abstinence from sexual intercourse as a method of STI prevention showed that more than 90% of respondents in both urban and rural areas acknowledged it as an effective means of preventing STIs (urban: 92.5%; rural: 95.2%; total of both: 93.9%). Having only one sexual partner at a time (urban: 74.3%; rural: 81.7%; total of both: 78.1%) and use of condom (urban: 83.8%; rural: 86.9%; total of both: 85.4%) also had substantial number of respondents in both urban and rural areas. Other STI preventive methods indicated by the respondents were use of antibiotics (urban: 20.8%; rural: 13.2%; total of both: 16.9%), rinsing vagina/penis after sex (urban: 18.7%; rural: 13.0%; total of both: 15.8%), and by praying (urban: 16.3%; rural: 12.3%; total of both: 14.2%).

Figure 4.9: Methods of HIV/AIDS Preventions Identified



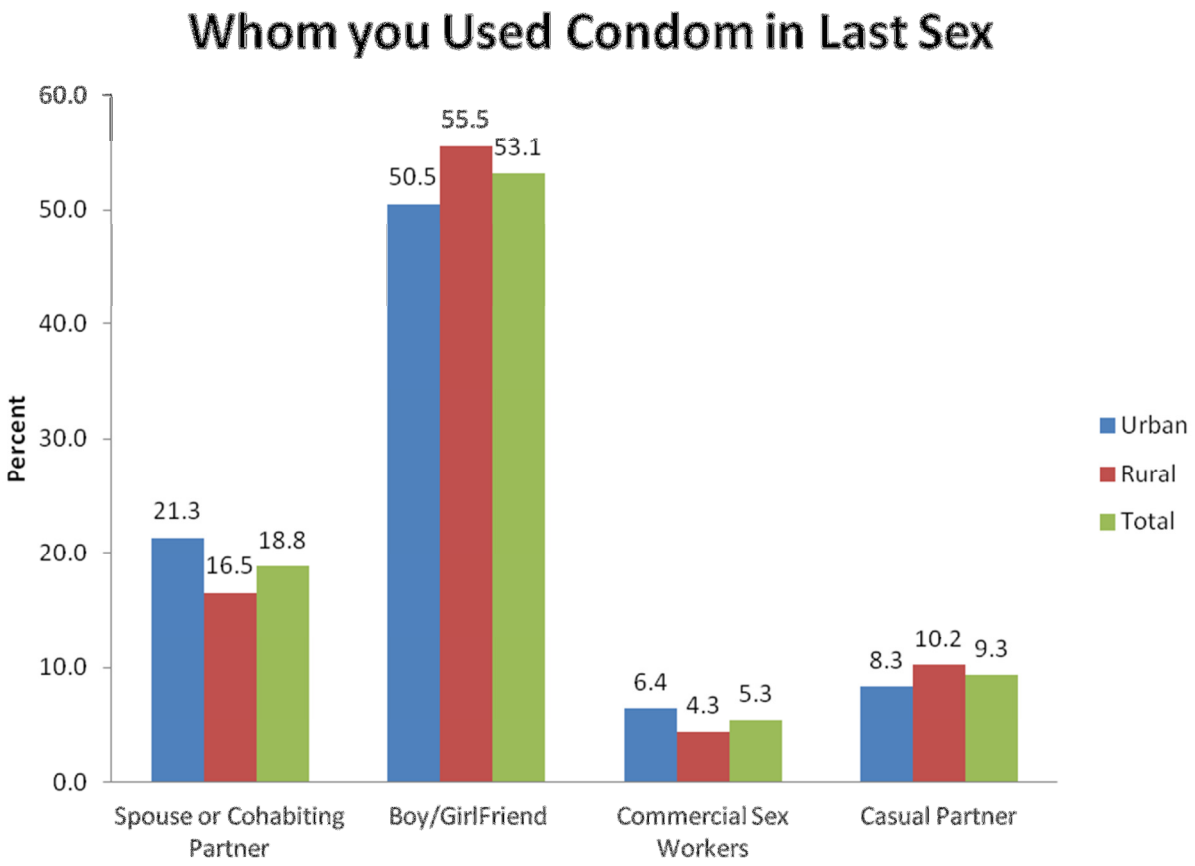
In the figure 4.9 above, the knowledge of preventive methods were assessed among out of school youths to compare and ascertain their knowledge of one or all methods in preventing HIV. The methods were "A" Abstinence; "B" be faithful to one partner; "C" use condom. The list of the three methods was made available to them. Out of school youths who knew all the three methods (urban: 59.7%; rural: 70.4%; total of both: 65.3%) were more than each of the other three methods; don't know any method (urban: 5.9%; rural: 4.9%; total of both: 5.4%), knows one method (urban: 14.0%; rural: 10.1%; total of both: 12.0%) and know two methods (urban: 12.6%; rural: 10.8%; total of both: 11.7%).

Figure 4.10: Reasons for Using Male Condoms



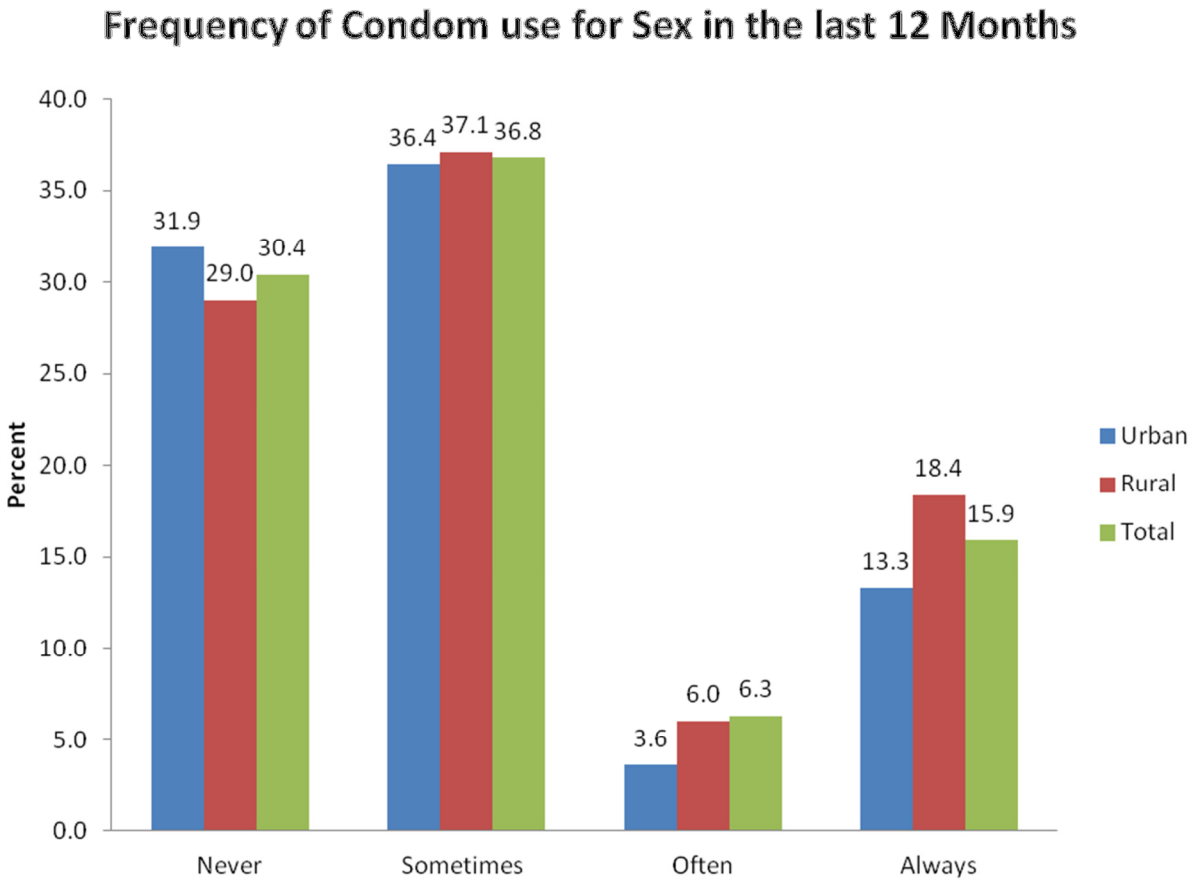
Information on reasons for use of condoms (male and female) was elicited from the respondents. These reasons include use as a contraceptive method against pregnancy and as a protection from HIV/STI among the out of school youths. In the figure 4.10 above, out of school youths who used condoms to protect themselves from HIV/STIs were (urban area: 17.3%, rural area: 16.4%, and in both areas: 16.8%). Similarly, percentage of condoms use by out of school youths to prevent unwanted pregnancy in urban and rural areas was urban: 5.3%, rural: 5.1%, total of both: 5.2%). For out of school youths who used condoms both to protect themselves from STIs and unwanted pregnancy included urban: 41.1%; rural: 48.5%; total of both: 44.9%. Finally, there were those who had other reasons for using condom (urban: 1.6%; rural: 1.7%; total of both: 1.6%).

Figure 4.11: Persons Condom Was Used With During Last Sex



Condom use at last sexual relationship is important in HIV prevention. These were relationships involving spouse or cohabiting partner, boy/girlfriend, commercial sex workers and casual partner. The figure 4.11 above shows whom the respondent used a condom with in his/her last sexual act. Out of school youths who used condom with their boy/girlfriends in their last sexual intercourse were (urban: 50.5%; rural: 55.5%; total of both: 53.1%), and out of school youths who used condom with their spouse or cohabiting partners were (urban: 21.3%; rural: 16.5%; total of both: 18.8%). Similarly, out of school youths who used condom with their casual partner (urban: 8.3%; rural: 10.2%; total of both: 9.3%) and commercial sex workers (urban: 6.4%; rural: 4.3%; total of both: 5.3%) had the lowest.

Figure 4.12: Frequency of Condom Use for Sex in the Last 12 Months



In the figure 4.12 above, out of school youths were asked the frequency of condom use for sex in the last 12 months. Consistent condom use as represented by always was 13%, 18.4%, 15.9% for urban, rural, total of both urban and rural respondents respectively. Those who used condoms often were the least (urban: 3.6%; rural: 6.0%; total of both: 6.3%). The proportions of out of school youths who never used condoms (urban: 31.9%; rural: 29.0%; total of both: 30.4%) or sometimes used condoms (urban: 36.4%; rural: 37.1%; total of both: 36.8%) during sexual intercourse were the majority in this study.

Figure 4.13: Whom Respondents Always Use Condom With

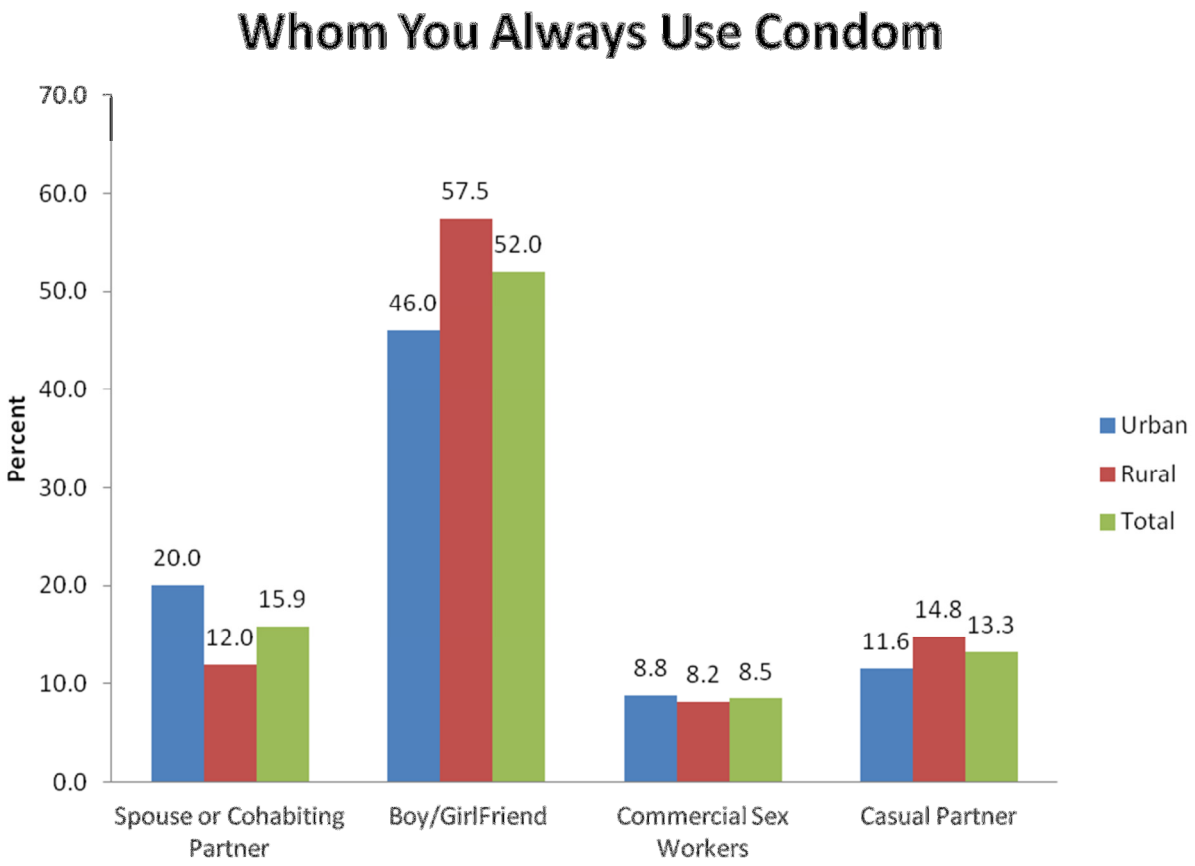
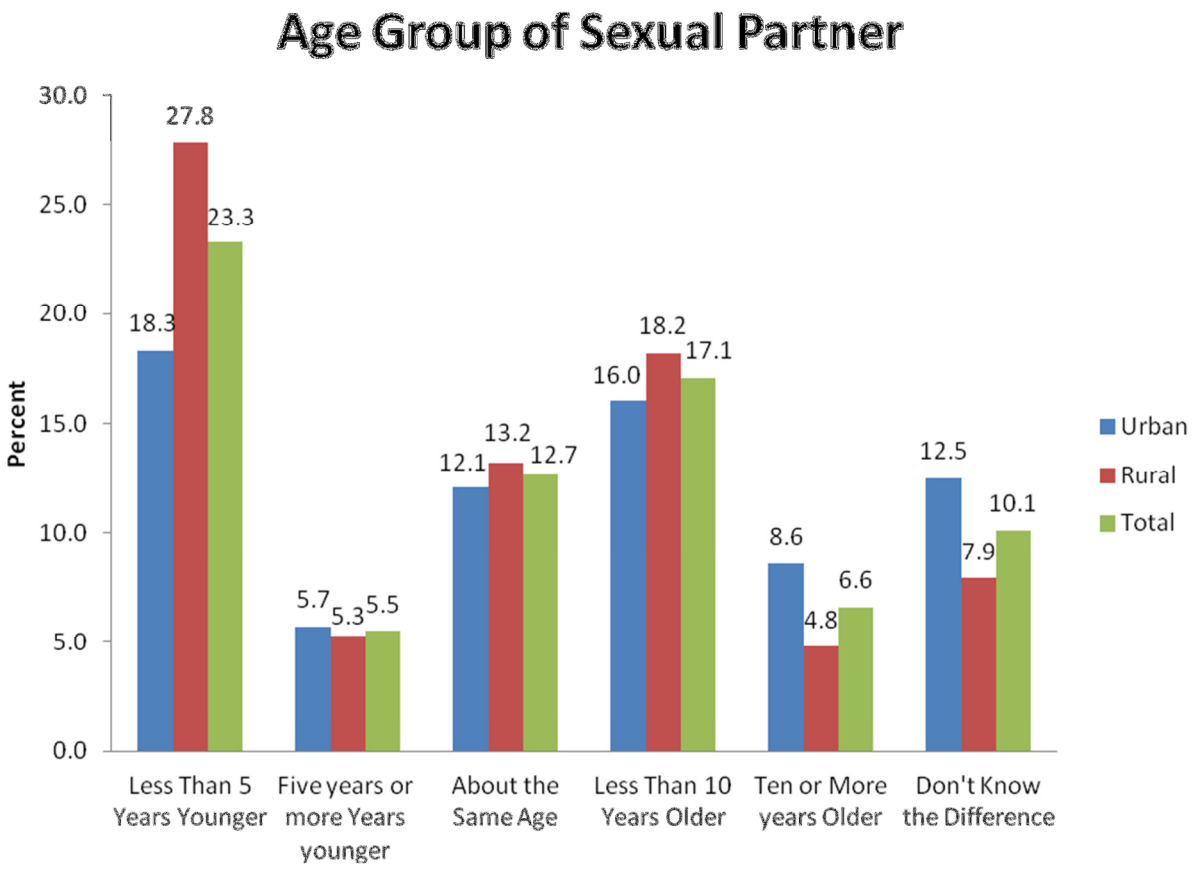


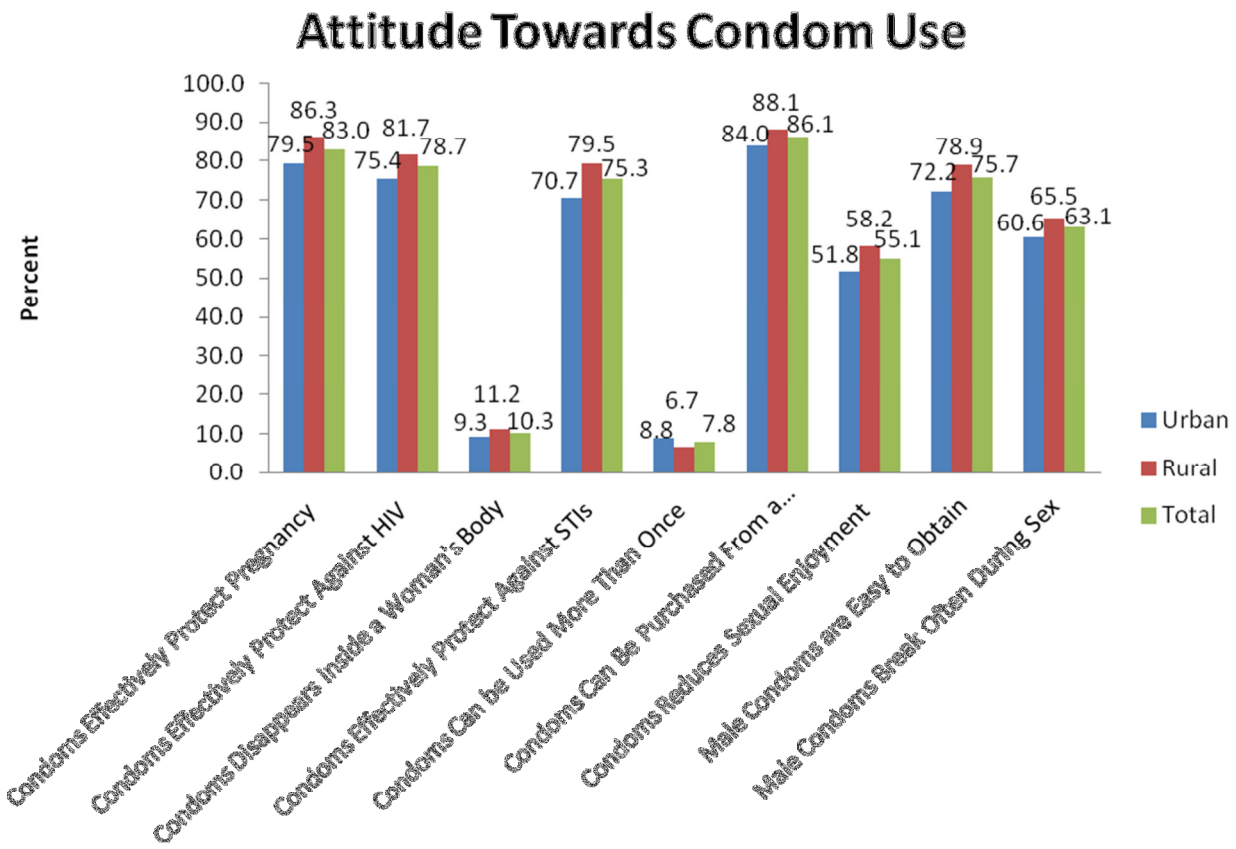
Figure 4.13 above shows the percentage distribution of respondents according to whom they always used condom with. From the analysis shown above, condom use between out of school youths and their boy/girlfriend was slightly below 50% in the urban areas with the value of 46.0%, while those in the rural areas was 57.5% and total for both rural and urban was 52.0%. Those who always used condom with their spouses or cohabiting partner were 20.0% in the urban areas, 12% in the rural areas and 15.9% in both locations. Furthermore, out of school youths who always used a condom with a casual partner were 11.6% in urban areas, 14.8% in rural area and 13.3% in both urban and rural areas. Also, out of school youths who always used condom with commercial sex workers were lowest with urban area having 8.8%, rural area having 8.2% and both areas having 8.5%.

Figure 4.14: Age Group of Sexual Partners



The figure 4.14 above describes the age group of sexual partners of out of school youths. This is important towards appreciating inter-generational sex dynamics among them. The figure shows that out of school youths who engaged in sexual relationship with partners less than 5 years were (urban: 18.3%; rural: 27.8%; total of both: 23.3%). Majority of them fell within this category. Whereas those that had sexual intercourse with partners five years or more years were (urban: 5.7%; rural: 5.3%; total of both: 5.5%), about the same age were (urban: 12.1%; rural: 13.2%; total of both: 12.7%), less than 10 years were (urban: 16.0%; rural: 18.2%; total of both: 17.1%), ten or more years older were (urban: 8.6%; rural: 4.8%; total of both: 6.6%), don't know the difference (urban: 12.5%; rural: 7.9%; total of both:10.1%).

Figure 4.15: Attitude towards Condom Use



In figure 4.15 above, questions were asked on attitude of out of school youths towards condom use. A substantial proportion of out of school youths were of the view that condoms effectively protect pregnancy (urban: 79.5%; rural: 86.3%; total of both: 83.0%); condoms effectively protect against HIV (urban: 75.4%; rural: 81.7%; total of both: 78.7%); condoms effectively protect against STIs (urban: 70.7%; rural: 79.5%; total of both: 75.3%); condoms can be purchased from a pharmacy, clinic/hospital (urban: 84.0%; rural: 88.1%; total of both: 86.1%); condoms reduces sexual enjoyment (urban: 51.8%; rural: 58.2%; total of both: 55.1%); male condoms were easy to obtain (urban: 72.2%; rural: 78.9%; total of both: 75.7%); and male condoms break often during sex (urban: 60.6%; rural: 65.5%; total of both: 63.1%). A few out of school youths share the idea that condoms disappears inside a woman's body (urban: 9.3%; rural: 11.2%; total of both: 10.3%) and that condoms can be used more than once (urban: 8.8%; rural: 6.7%; and total of both: 7.8%).

Figure 4.16: Places Where Condom Can Be Obtained/ Purchased

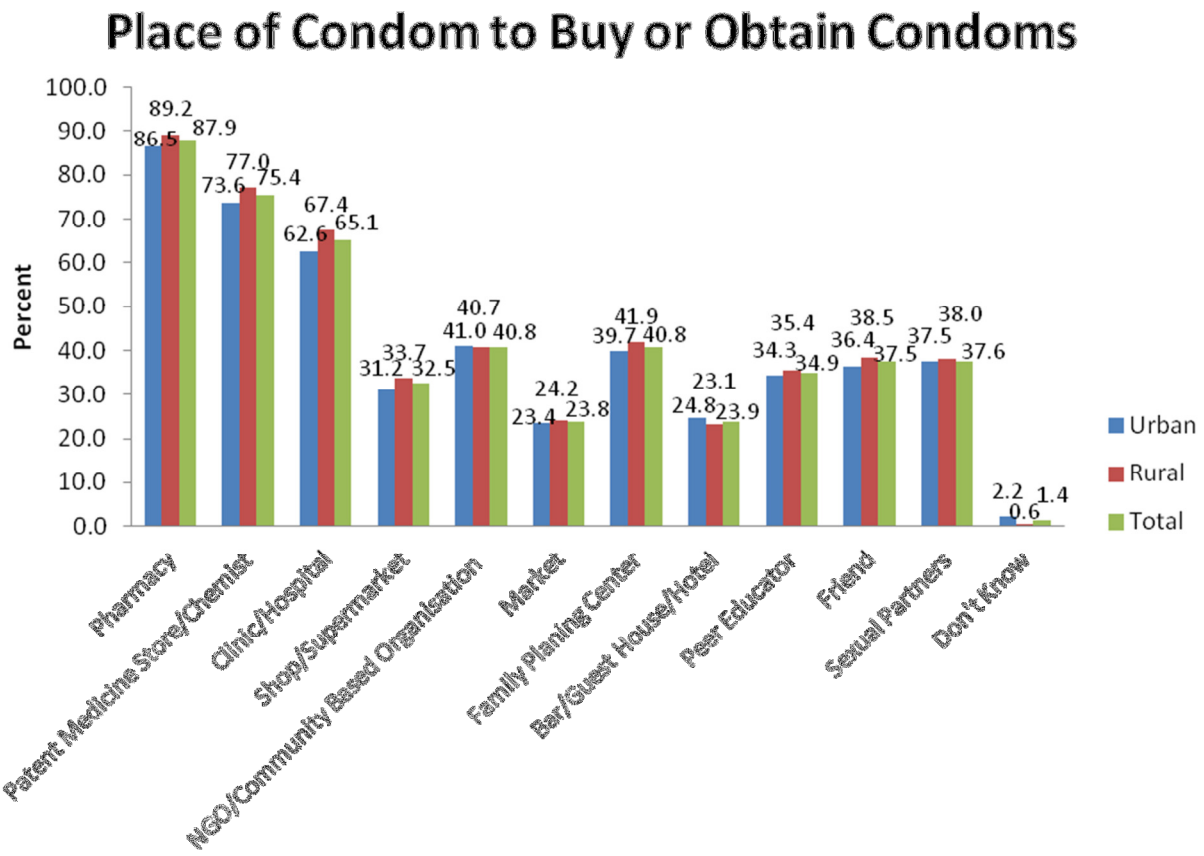
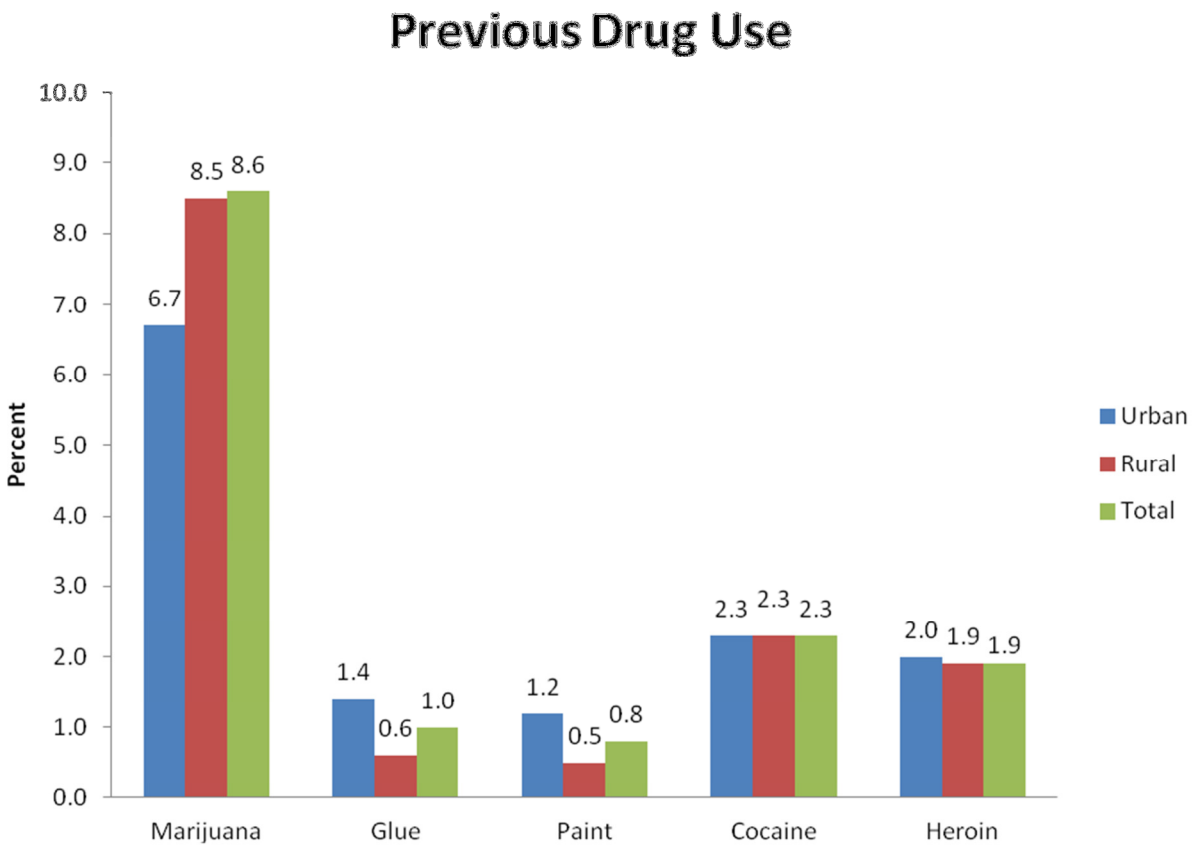


Figure 4.16 shows places where condoms can be purchased or where out of school youths prefer to get condoms. From the graph above, it is evident that most out of school youth got condoms from pharmacy (urban: 86.5%; rural: 89.2%; total of both: 87.9%), patent medicine store/chemist (urban: 73.6%; rural: 77.0%; total of both: 75.4%) or clinic/hospital (urban: 62.6%; rural: 67.4%; total of both: 65.1%). Other youths obtained their condoms from shops/supermarkets (urban: 31.2%; rural: 33.7%; total of both: 32.5%), NGO/community based organizations (urban: 41.0%; rural: 40.7%; total of both: 40.8%), family planning centers (urban: 39.7%; rural: 41.9%; total of both: 40.8%), peer educators (urban: 34.3%; rural: 35.4%; total of both: 34.9%), from a friends (urban: 36.4%; rural: 38.5%; total of both: 37.5%) and sexual partners (urban: 37.5%; rural: 38.0%; total of both: 37.6%). The least places they got their condoms were the market places (urban: 23.4%; rural: 24.2%; total of both: 23.8%) and bars/guest houses/hotels (urban: 24.8%; rural: 23.1%; total of both: 23.9%). Some out of school youths did not know where to get condoms (urban: 2.2%; rural: 0.6%; total of both: 1.4%).

Figure 4.17: Previous Drug Use



The figure 4.17 above shows previous drugs used by some of the out of school youths. Marijuana (urban: 6.7%; rural: 8.5%; total of both: 8.6%) was the most widely used drug among out of school youths, while paint (urban: 1.2%; rural: 0.5%; total of both: 0.8%) was the least used. Glue (urban: 1.4%; rural: 0.6%; total of both: 1.0%), cocaine (urban: 2.3%; rural: 2.3%; total of both: 2.3%) and heroin (urban: 2.0%; rural: 1.9%; total of both: 1.9%) were other drugs used by out of school youths.

4.7 Bivariate Analysis Comparing HIV as an Outcome Variable with Explanatory Variables/Indicators

Complete Case Analysis (statistical test for independence)

4.7.1 Socio-Demographic Characteristics of Respondents

HIV infection was found to be higher among out of school in urban area in age group 20 – 24years 32(6.9%) compared to their counterpart in rural area 28(5.2%). Respondents in rural area aged 20 – 24years were more likely to be HIV infected compared to those aged 15 – 19years in the rural area with a statistical significant difference of p-value of 0.011. Similarly, among out of school youths living in both rural and urban, it is more likely for those aged 20 – 24years to be HIV infected compared to those aged 15 – 19years (p-value=0.049).

Among youths that have been out of school for less than five years, 26(5.2%) were HIV infected in urban area compared with 20(10.4%) who were respondents that were out of school for more than five years with a statistically significant difference of 0.013; unlike the rural area where 25(4.3%) of those that were out of school for less five years were HIV infected compared to 6(3.4%) those that were out of school for more than five years with a p-value of 0.569.

The mean difference of years of being out of school between respondents that were HIV infected and those that were not HIV infected in urban area was p-value 0.047 whereas in rural area, the mean difference was 0.914.

The proportion of males that were out of school youths that were HIV infected were 25(5.8%) compared to their female counterparts 21 (7.6%) in urban area with a p-value of 0.336 whereas 16(3.1%) male out of school youths in rural area that were HIV infected compared with their female counterparts 15(6.0%) with a p-value of 0.058. Likewise, there is a statistical difference between sex and HIV infection with a p-value of 0.038.

Among out of school youths that are Christians, 23(4.7%) were HIV infected in urban area compared to 20(3.4%) in rural area that were HIV infected. Also, among out of school youths

that were Muslims, 22(11.1) were HIV infected in urban area compared to 10(5.9%) in rural area.

Out of school youths of Igala ethnic group has the highest prevalence of HIV in urban area 12(10.0%) followed by Ebira 8(8.0%), Idoma 2(7.1%); Yoruba 7(6.9%), Hausa 2(6.7%), Ibo 2(6.4%) and Tiv 11(4.0%) whereas in rural area HIV prevalence by ethnic groups was as follows: Yoruba 2(5.3%), Hausa 1(14.3%), Ibo 1(4.8%), Idoma 5(3.6%), Tiv 8(2.7%), Ebira 4(6.1%), Igala 9(5.6%), Igede 1(3.3%). There was no significant difference between ethnic group and HIV prevalence (p-value 0.084).

Out of school youths that were HIV infected in urban area among the single were 27(5.1%); cohabiting 10(21.7%) and married 8(6.6%) whereas HIV infection in rural area among the single were 18(3.2%); cohabiting 4(9.8%) and married 7(4.8%). In urban area, HIV infection among out of school youths that did not complete secondary was 17(6.8%); completed secondary education 13(4.8%) and primary education 11(9.7%) and in rural areas, out of school youths with HIV infection that completed secondary school were 12(3.2%), secondary incomplete 11(5.2%) and primary education 5(5.1%).

Table 4.7: Association between Socio-Demographic Characteristics and HIV Prevalence

Characteristics	Urban				Rural				Overall p-value
	HIV+ N(%)	HIV- N(%)	Total N	P-value	HIV+ N(%)	HIV- N(%)	Total N	P-value	
Age (years)									
15-19	14(5.7)	231(94.3)	245	0.553	3(1.3)	228(98.7)	231	0.011	0.049
20-24	32(6.9)	434(93.1)	466		28(5.2)	505(94.8)	533		
Mean age	20.8±2.6	20.4±2.8	711	0.303	21.7±2.2	20.7±2.7	764	0.0491	0.058
Years of Out of School									
<5	26(5.2)	478(97.8)	504	0.013	25(4.3)	551(95.7)	576	0.569	0.088
≥5	20(10.4)	172(89.6)	192		6(3.4)	172(96.6)	178		
Mean year of out of School	4.6±3.8	3.5±2.8	696	0.015	3.4±2.3	3.3±2.6	754	0.9141	0.032
Sex									
Male	25(5.8)	409(94.2)	434	0.336	16(3.1)	498(96.9)	514	0.058	0.038
Female	21(7.6)	256(92.4)	277		15(6.0)	235(94.0)	250		
Religion									
Christianity	23(4.7)	472(95.4)	495	0.017	20(3.4)	564(96.6)	584	0.205	0.003
Islam	22(11.1)	177(88.9)	199		10(5.9)	161(94.1)	171		
Traditional	1(9.1)	10(90.9)	11		1(16.7)	5(83.3)	6		
Others	0(0.0)	6(100.0)	6		0(0.0)	3(100.0)	3		
Ethnic Group									
Yoruba	7(6.9)	95(93.1)	102	0.289	2(5.3)	36(94.7)	38	0.713	0.084
Hausa	2(6.7)	28(93.3)	30		1(14.3)	6(85.7)	7		
Ibo	2(6.4)	29(93.6)	31		1(4.8)	20(95.2)	21		
Idoma	2(7.1)	26(92.9)	28		5(3.6)	133(96.4)	138		
Tiv	11(4.0)	267(96.0)	278		8(2.7)	293(97.3)	301		
Ebira	8(8.0)	92(92.0)	100		4(6.1)	62(93.9)	66		
Igala	12(10.0)	108(90.0)	120		9(5.6)	152(94.4)	161		
Igede	0(0.0)	12(100)	12		1(3.3)	29(96.7)	30		
Others	2(20.0)	8(80.0)	10		0(0.0)	2(100.0)	2		
Marital Status									
Single	27(5.1)	499(94.9)	526	0.001	18(3.2)	535(96.8)	553	0.143	<0.001
Married	8(6.6)	114(93.4)	122		7(4.8)	138(95.2)	145		
Co-habiting	10(21.7)	36(78.3)	46		4(9.8)	37(90.2)	41		
Separated	1(10.0)	9(90.0)	10		1(12.5)	7(87.5)	8		
Divorced	0(0.0)	4(100.0)	4		1(10.0)	9(90.0)	10		
Level of Education									
Primary	11(9.7)	102(90.3)	113	0.571	5(5.1)	93(94.9)	98	0.825	0.342
Secondary Incomplete	17(6.8)	234(93.2)	251		11(5.2)	201(94.8)	212		
Secondary Completed	13(4.8)	257(95.2)	270		12(3.2)	358(96.8)	370		
Tertiary Incomplete	1(4.2)	23(95.8)	24		1(3.3)	29(96.7)	30		
Tertiary Completed	3(7.7)	36(92.3)	39		2(4.9)	39(95.1)	41		
Others	1(11.1)	8(88.9)	9		0(0.0)	11(100.0)	11		

4.8: Family and Socio-Economic Characteristics of Respondents

In table 8 below, among out of school youths that lived in urban area and in monogamous homes 26(6.5%) were HIV infected and in polygamous home 20(6.9%) were HIV infected. When compared to those that lived in rural area and lived in monogamous home 18(4.3%) and polygamous home 13(4.0%) were HIV infected and was not statistically significant (p-value =0.9).

Out of school youths in urban area who lived with their both parents, their guardian/relative, their cohabiting partners and mother only 11(5.7%); 10(7.2%); 8(15.1%) and 5(4.6%) were HIV infected respectively. Whereas out of school youths in rural area who lived with their both parents, their guardian/relative, their cohabiting partners and mother only 5(2.3%); 3(2.1%); 3(8.3%) and 4(3.7%) were HIV infected respectively.

Among out of school youths that are employed in urban area, 28(7.2%) were HIV infected compared to the unemployed youths with HIV prevalence of 17(5.4%) and a p-value of 0.334. However, out of school youths that were employed in the rural area, 21(4.8%) were HIV infected compared to those that were unemployed with HIV infection of 10(3.1%) and a p-value of 0.222.

Among out of school youths that were employed, HIV prevalence was analyzed according to occupations; self-employed, hawkers/Vendors, artisan, farmer, housewife and miner had the following magnitude of HIV prevalence 14(6.9%), 5(6.7%), 6(6.1%), 3(7.5%), 2(9.1%) and 2(22.2%) respectively in the urban area. Whereas among out of school youths that were employed in rural area, HIV prevalence was as follows: self-employed, hawkers/vendors, artisan, farmer, housewife and miner 11(4.4%), 4(13.8%), 2(2.8%), 2(4.0%), 0(0.0) and 0(0.0) respectively.

Average monthly income: in urban area among out of school youths that earned lower incomes such as less than NGN10,000 per month and between NGN10,000 – NGN30,000 per month had higher HIV prevalence of 11(7.7%) and 14(7.5%) respectively compared to those earned NGN60,000. Similarly, in the rural area, out of school youths that earned lower incomes such as

less than NGN10,000 per month and between NGN10,000 – NGN30,000 per month had higher HIV prevalence of 11(6.8%) and 10(5.1%) respectively.

Among urban out of school youths, HIV prevalence decreases with socio-economic status. Those with higher socio-economic status had the lower prevalence. Low socio-economic status had a prevalence of 9(7.0%), middle had a prevalence of 6(5.0%) and high had a prevalence of 4(3.0%). Similarly, in rural area, HIV prevalence decreases with socio-economic status. Low socio-economic status had a prevalence of 10(6.4%), middle had a prevalence of 8(4.5%) and high had a prevalence of 3(1.7%).

Out of school youths that lived in their community in urban area for more than five years had HIV prevalence of 35(6.5%) compared to those that lived in the community for less than five years 11(6.5%). Whereas out of school youths that lived in their community or village in rural area for more than five years had HIV prevalence of 21(3.6%) compared to those that lived in the community/village for less than five years 9(5.8%). There was not statistical significance difference between length of living in a community and HIV prevalence (p-value 0.406).

In urban area out of school youths that lived away from home for more than one month had HIV prevalence of 30(7.6%) compared to those that did not live away from home for more than one month 16(5.1%) whereas in rural area out of school youths that lived away from home for more than one month had HIV prevalence of 19(4.4%) and compared to those that did not live away from home for more than one month 12(3.8%).

Table 4.8: Family and Socio-Economic Characteristics of Respondents

Characteristics	Urban				Rural				Overall p-value
	HIV+ N(%)	HIV- N(%)	Total N	P-value	HIV+ N(%)	HIV- N(%)	Total N(%)	P-value	
Family type									
Monogamous	26(6.5)	374(93.5)	400	0.846	18(4.3)	406(95.8)	424	0.854	0.900
Polygamous	20(6.9)	271(93.5)	291		13(4.0)	314(96.0)	327		
With whom lived with									
Both parents	11(5.7)	181(94.3)	192	0.150	5(2.3)	211(97.7)	216	0.308	0.084
Mother only	5(4.6)	104(95.4)	109		4(3.7)	103(96.3)	107		
Father only	1(2.1)	46(97.9)	47		4(6.7)	56(93.3)	60		
Guardian/Relative	10(7.2)	129(92.8)	139		3(2.1)	140(97.9)	143		
Cohabitant Partner	8(15.1)	45(84.9)	53		3(8.3)	33(91.7)	36		
Husband	4(8.7)	42(91.3)	46		3(6.0)	47(94.0)	50		
Wife	5(8.9)	51(91.1)	56		4(4.9)	78(95.1)	82		
Others	2(3.3)	59(96.7)	61		5(7.2)	64(92.8)	69		
Occupation									
Employed	28(7.2)	358(92.8)	386	0.334	21(4.8)	413(95.2)	434	0.222	0.137
Unemployed	17(5.4)	295(94.6)	312		10(3.1)	316(96.9)	326		
Main Occupation									
Self Employed	14(6.9)	188(93.1)	202	0.713	11(4.4)	240(95.6)	251	0.185	0.750
Hawkers/Vendors	5(6.7)	70(93.3)	75		4(13.8)	25(86.2)	29		
Artisan	6(6.1)	92(93.9)	98		2(2.8)	70(97.2)	72		
Farmer	3(7.5)	37(92.5)	40		2(4.0)	48(96.0)	50		
Housewife	2(9.1)	20(90.9)	22		0(0.0)	25(100.0)	25		
Miner	2(22.2)	7(77.8)	9		0(0.0)	8(100.0)	8		
Others	0(0.0)	4(100.0)	4		2(9.1)	20(90.9)	22		
Average Monthly Income									
<N10,000	14(7.5)	173(92.5)	187	0.621	10(5.1)	185(94.9)	195	0.329	0.163
N10,000 – N30,000	11(7.7)	132(92.3)	143		11(6.8)	152(93.2)	163		
N31,000 – N60,000	1(2.9)	34(97.1)	35		0(0.0)	34(100.0)	34		
> N60,000	0(0.0)	4(100.0)	4		0(0.0)	5(100.0)	5		
None	10(4.9)	196(95.1)	206		6(3.2)	184(96.8)	190		
Wealth Index									
Low	9(7.0)	120(93.0)	129	0.335	10(6.4)	146(93.6)	156	0.092	0.843
Middle	6(5.0)	115(95.0)	121		8(4.5)	170(95.5)	178		
High	4(3.0)	129(97.0)	133		3(1.7)	174(98.3)	177		
Length of time living in the village									
<5	11(6.5)	158(93.5)	169	0.988	9(5.8)	147(94.2)	156	0.215	0.406
≥5	35(6.5)	500(93.5)	535		21(3.6)	567(96.4)	588		
Mean Length of time	10.2±6.7	10.9±7.0	704	0.4878	10.6±7.6	11.8±7.2	744	0.3742	0.2219
Away from home									
Yes	30(7.6)	366(92.4)	396	0.193	19(4.4)	415(95.6)	434	0.693	0.225
No	16(5.1)	295(94.9)	311		12(3.8)	304(96.2)	316		

4.9 Assessing HIV prevalence (using knowledge of transmission and practices)

4.9.1 Ever Had About HIV/AIDS:

Among out of school youths that had ever heard about HIV/AIDS in the urban area: 43(6.5%) were HIV infected and 30(4.1%) were HIV infected in the rural area with p-value of 0.851 (not statistically significant).

4.9.2 Knowledge about HIV Transmission:

Among out of school youths that knew about HIV transmission through *blood transfusion* in the urban area: 39(6.4%) were HIV infected and in the rural area: 27(3.9%) were HIV infected with p-value of 0.595. Also, among out of school youths that knew about HIV transmission through *Sexual Intercourse* in the urban area: 43(6.5%) were HIV infected and in the rural area, 31(4.2%) were HIV infected with a p-value of 0.911. Among out of school youths that knew about HIV transmission through sharing of sharp objects or instrument in the urban area: 40(6.4%) were HIV infected and in the rural area, 30(4.2%) were HIV infected with a p-value of 0.844.

4.9.3 Do you agree that HIV is possible to be cured?

Among out of school youths that agreed that HIV infection is possible to be cured in the urban area: 14(10.6%) were HIV infected and in the rural area: 3(2.3%) were HIV infected with a p-value of 0.231.

4.9.4 HIV infected person always looks unhealthy?

Among out of school youths that believed that HIV infected person always looks unhealthy in the urban area: 21(9.1%) were HIV infected and in the rural area: 9(4.6) were HIV infected with a p-value of 0.136.

4.9.5 Condom Reduces the Risk of Infection?

Among out of school youths that agreed that condom reduces the risk of infection in the urban area: 34(6.2%) were HIV infected and in the rural area 25(4.2%) were HIV infected with a p-value of 0.904.

4.9.10 Have You Ever Heard of Sexually Transmitted Infections?

Among out of school youths that had ever heard of sexually transmitted infections in the urban area: 39(6.6%) were HIV infected and in the rural area 27(4.1%) were HIV infected with a p-value of 0.927.

4.9.11 Are Youth at Risk of Contracting STI or HIV Infections?

Among out of school youths that believed that youths are at risk of contracting STI or HIV infections in the urban area: 35(6.3%) were HIV infected and in the rural area 23(3.9%) were HIV infected with a p-value of 0.571.

4.9.12 How Would You Rate Yourself?

Among out of school youths that rated themselves *high* with regards to risk of HIV infection in the urban area: 11(8.2%) were HIV infected and 123(91.8%) were not HIV infected; and among out of school youths that were interviewed in the rural area who also rated themselves *high risk* 9(5.7%) were HIV infected and 149(94.3%) were not HIV-infected. Meanwhile, among out of school youths that rated themselves low on risk of HIV infection in the urban area: 18(6.1%) were HIV infected and 279(93.9%) were not HIV infected; and among out of school youths that were interviewed in the rural area who rated themselves as *low risk*, 15(3.6%) were HIV infected and 397(96.4%) were not HIV-infected. On the other hand, out of school youths that rated themselves with *no risk* of HIV infection in the urban area: 16(6.1%) were HIV infected and 248(93.9%) were not HIV infected; and among out of school youths that were interviewed in the rural area with *no risk* 7(3.9%) were HIV infected and 175(96.1%) were not HIV-infected. Relationship between HIV infection and risk rating was p-value 0.365 whereas in urban area, the p-value was 0.662 and in rural area, the p-value was 0.531 which was not statistically significant.

4.9.13 Which of the following are symptoms of STIs in Men?

Among out of school youths that responded to *genital discharge* as a symptom of STI in men in the urban area: 11(3.6%) were HIV infected and 299(96.1%) were not HIV infected with a p-value of 0.007; and among out of school youths that were interviewed in the rural area, 15(3.4%) were HIV infected and 422(96.6%) were not HIV-infected with a p-value of 0.715. The overall p-value among men in both rural and urban areas was 0.013 (statistically significant).

Among out of school youths that had responded to *burning pain in urination* as a symptom of STI in men in the urban area: 21(5.3%) were HIV infected and 378(94.7%) were not HIV infected with a p-value of 0.013; and among out of school youths that were interviewed in the rural area, 18(3.4%) were HIV infected and 512(96.6%) were not HIV-infected with a p-value of 0.475. The overall p-value in both rural and urban areas was 0.113.

Among out of school youths that had responded to *genital ulcers/sores* as a symptom of STI in men in the urban area: 14(4.4%) were HIV infected and 305(95.6%) were not HIV infected with a p-value of 0.283; and among out of school youths that were interviewed in the rural area, 13(3.0%) were HIV infected and 418(97.0%) were not HIV-infected with a p-value of 0.233. The overall p-value in both rural and urban areas was 0.066.

Among out of school youths that had responded to *swelling in groin area* as a symptom of STI in men in the urban area: 9(3.2%) were HIV infected and 271(96.8%) were not HIV infected with a p-value of 0.051; and among out of school youths that were interviewed in the rural area, 10(2.6%) were HIV infected and 381(97.4%) were not HIV-infected with a p-value of 0.143. The overall p-value in both rural and urban areas was 0.005.

4.9.14 Which of the following are symptoms of STIs in women?

Among out of school youths that had responded to *lower abdominal pain* as a symptom of STI in women in the urban area: 18(5.3%) were HIV infected and 321(94.7%) were not HIV infected with a p-value of 0.236; and among out of school youths that were interviewed in the rural area, 14(3.1%) were HIV infected and 432(96.9%) were not HIV-infected with a p-value of 0.001. The overall p-value in rural and urban areas was 0.033 (statistically significant).

Among out of school youths that had responded to *genital discharge* as a symptom of STI in women in the urban area: 21(6.4%) were HIV infected and 307(93.6%) were not HIV infected with a p-value of 0.295; and among out of school youths that were interviewed in the rural area, 17(4.0%) were HIV infected and 411(96.0%) were not HIV-infected with a p-value of 0.602. The overall p-value in both rural and urban areas was 0.784.

Among out of school youths that had responded to *foul smelling discharge* as a symptom of STI in women in the urban area: 19(5.9%) were HIV infected and 305(94.1%) were not HIV infected with a p-value of 0.926; and among out of school youths that were interviewed in the rural area,

16(3.8%) were HIV infected and 407(96.2%) were not HIV-infected with a p-value of 0.921. The overall p-value in both rural and urban areas was 0.953.

Among out of school youths that had responded to *genital ulcers/sores* as a symptom of STI in women in the urban area: 14(5.1%) were HIV infected and 260(94.9%) were not HIV infected with a p-value of 0.328; and among out of school youths that were interviewed in the rural area,13(3.3%) were HIV infected and 382(96.7%) were not HIV-infected with a p-value of 0.341.The overall p-value in both rural and urban areas was 0.215.

Among out of school youths that had responded to *swelling in groin area* as a symptom of STI in women in the urban area: 13(4.9%) were HIV infected and 253(95.1%) were not HIV infected with a p-value of 0.212; and among out of school youths that were interviewed in the rural area, 10(2.7%) were HIV infected and 365(97.3%) were not HIV-infected with a p-value of 0.247. The overall p-value in both rural and urban areas was 0.037 (statistically significant).

Among out of school youths that had responded to *itching* as a symptom of STI in women in the urban area: 21(6.1%) were HIV infected and 321(93.9%) were not HIV infected with a p-value of 0.948; and among out of school youths that were interviewed in the rural area, 18(4.0%) were HIV infected and 436(96.0%) were not HIV-infected with a p-value of 0.336. The overall p-value in both rural and urban areas was 0.877.

Among out of school youths that had responded to *painful sexual intercourse* as a symptom of STI in women in the urban area: 14(5.2%) were HIV infected and 257(94.8%) were not HIV infected with a p-value of 0.273; and among out of school youths that were interviewed in the rural area, 14(3.9%) were HIV infected and 347(96.1%) were not HIV-infected with a p-value of 0.603. The overall p-value in both rural and urban areas was 0.136.

4.9.15 What are Sources of Treatment of STIs?

Among out of school youths who believed the source of STI treatment is in the *hospital* in the urban area: 41(6.7%) were HIV infected and 569(93.3%) were not HIV infected with a p-value of 0.788; and among out of school youths that were interviewed in the rural area, 26(4.0%) were HIV infected and 619(96.0%) were not HIV-infected. The overall p-value in both rural and urban areas was 0.812.

Among out of school youths who believed the source of STI treatment is from the *traditional doctor* in the urban area: 13(7.2%) were HIV infected and 168(92.8%) were not HIV infected with a p-value of 0.816; and among out of school youths that were interviewed in the rural area, 9(4.5%) were HIV infected and 191(95.5%) were not HIV-infected. The overall p-value in both rural and urban areas was 0.509.

Among out of school youths who indicated the source of STI treatment is from *friends* in the urban area: 1(5.0%) were HIV infected and 19(95.0%) were not HIV infected with a p-value of 0.660; and among out of school youths that were interviewed in the rural area, 2(13.3%) were HIV infected and 13(86.7%) were not HIV-infected with a p-value of 0.696. The overall p-value in both rural and urban areas was 0.903.

Among out of school youths who thought the source of STI treatment is from the *Drug Store/Pharmacy* in the urban area: 22(6.9%) were HIV infected and 295(93.1%) were not HIV infected with a p-value of 0.349; and among out of school youths that were interviewed in the rural area, 12(3.4%) were HIV infected and 343(96.6%) were not HIV-infected. The overall p-value in both rural and urban areas was 0.129.

4.9.16 Do You Know Someone living with the Virus that Causes HIV or AIDS?

Among out of school youths that knew someone living with HIV in the urban area: 24(7.5%) were HIV infected and 295(92.5%) were not HIV infected with a p-value of 0.320; and among out of school youths that were interviewed in the rural area, 19(4.6%) were HIV infected and 398(95.4%) were not HIV-infected with a p-value of 0.449. The overall p-value in both rural and urban areas was 0.298.

4.9.17 Do you know someone who died of AIDS?

Among out of school youths that knew someone that had AIDS had died in the urban area: 20(6.0%) were HIV infected and 315(94.0%) were not HIV infected with a p-value of 0.577; and among out of school youths that were interviewed in the rural area who knew someone had died of AIDS, 20(4.2%) were HIV infected and 451(95.8%) were not HIV infected with a p-value of 0.745.The overall p-value in both rural and urban areas was 0.597.

4.9.18 Is it possible that a Healthy Looking Person Has the Virus that Caused AIDS?

Among out of school youths that believed that a healthy looking person can have the virus in the urban area: 29(5.5%) were HIV infected and 496(94.5%) were not HIV infected with a p-value of 0.091; and whereas among out of school youths that were interviewed in the rural area, 22(3.7%) were HIV infected and 569(96.3%) were not HIV-infected with a p-value of 0.337.

Table 4.9: Knowledge of transmission; practices related to HIV/AIDS infection

Characteristics	Urban				Rural				Overall p-value
	HIV+ N(%)	HIV- N(%)	Total N	P-value	HIV+ N(%)	HIV- N(%)	Total N(%)	P-value	
Ever Had About HIV/AIDS									
Yes	43(6.5)	620(93.5)	663	0.662*	30(4.1)	703(95.9)	733	0.473*	0.851
No	1(4.2)	23(95.8)	24		0(0.0)	9(100.0)	9		
Don't know	0(0.0)	9(100.0)	9		1(11.1)	8(88.9)	9		
Knowledge About HIV Transmission									
Through Blood Transfusion	39(6.4)	570(93.6)	609	0.643	27(3.9)	661(96.1)	688	0.750	0.595
Through Sexual Intercourse	43(6.5)	619(93.5)	662	0.769	31(4.2)	701(95.8)	732	0.432	0.911
Through Sharing of Sharp Objects or instrument	40(6.4)	582(93.6)	622	0.937	30(4.2)	677(95.8)	707	0.808	0.844
By Shaking Hands With an Infected person	2(4.3)	45(95.7)	47	0.565*	1(2.9)	34(97.1)	35	0.702	0.526
By eating from the same plate with infected person	2(4.4)	43(95.6)	45	0.605*	2(3.8)	51(96.2)	53	0.916	0.622
By Sharing Eating Utensils With Infected Person	7(10.4)	60(89.6)	67	0.170	1(1.7)	59(98.3)	60	0.327*	0.586
Which of the Following Do You Agree With:									
HIV Infection is Possible to be Cured									
Yes	14(10.6)	118(89.4)	132	0.053	3(2.3)	126(97.7)	129	0.457	0.231
No	20(4.8)	396(95.2)	416		21(4.2)	481(95.8)	502		
Don't Know	12(7.5)	148(92.5)	160		7(5.3)	124(94.7)	131		
HIV Infected Person Always Looks Unhealthy									

Yes	21(9.1)	210(90.9)	231	0.119	9(4.6)	185(95.4)	194	0.588*	0.136
No	20(4.9)	386(95.1)	406		20(4.2)	455(95.8)	475		
Don't Know	5(7.1)	65(92.9)	70		2(2.1)	91(97.9)	93		
Condom Reduces the Risk of Infection									
Yes	34(6.2)	514(93.8)	548	0.807	25(4.2)	571(95.8)	596	0.714	0.904
No	4(6.9)	54(93.1)	58		3(5.4)	53(94.6)	56		
Don't Know	8(7.9)	93(92.1)	101		3(2.8)	103(97.2)	106		
Have You Ever Heard of Sexually Transmitted Infections									
Yes	39(6.6)	549(93.4)	588	0.778	27(4.1)	638(95.9)	665	0.976	0.927
No	7(5.9)	111(94.1)	118		4(4.1)	93(95.9)	97		
Are Youth at Risk of Contracting STI or HIV Infections									
Yes	35(6.3)	521(93.7)	556	0.731	23(3.9)	565(96.1)	588	0.592	0.571
No	10(7.1)	131(92.9)	141		8(4.9)	157(95.1)	165		
How Would You Rate Yourself									
High	11(8.2)	123(91.8)	134	0.662	9(5.7)	149(94.3)	158	0.531	0.365
Low	18(6.1)	279(93.9)	297		15(3.6)	397(96.4)	412		
No Risk at all	16(6.1)	248(93.9)	264		7(3.9)	175(96.1)	182		
Which of the Following are Symptoms of STIs in *Men*									
Genital Discharge	11(3.6)	299(96.1)	310	0.007	15(3.4)	422(96.6)	437	0.715	0.013
Burning Pain in Urination	21(5.3)	378(94.7)	399	0.013	18(3.4)	512(96.6)	530	0.475	0.113
Genital Ulcers/Sores	14(4.4)	305(95.6)	319	0.283	13(3.0)	418(97.0)	431	0.233	0.066
Swelling in Groin Area	9(3.2)	271(96.8)	280	0.051	10(2.6)	381(97.4)	391	0.143	0.005
Chest Pain	7(3.8)	176(96.2)	183	0.443	7(3.0)	224(97.0)	231	0.834	0.384
Others									
Which of the Following are Symptoms of STIs in *Women*									
Lower Abdominal Pain	18(5.3)	321(94.7)	339	0.236	14(3.1)	432(96.9)	446	0.001	0.033
Genital Discharge	21(6.4)	307(93.6)	328	0.295	17(4.0)	411(96.0)	428	0.602	0.784
Foul Smelling Discharge	19(5.9)	305(94.1)	324	0.926	16(3.8)	407(96.2)	423	0.921	0.953
Headaches	5(2.5)	194(97.5)	199	0.004	8(2.4)	318(97.6)	326	0.129	0.000
Genital Ulcers/Sores	14(5.1)	260(94.9)	274	0.328	13(3.3)	382(96.7)	395	0.341	0.215
Swelling in Groin Area	13(4.9)	253(95.1)	266	0.212	10(2.7)	365(97.3)	375	0.247	0.037
Itching	21(6.1)	321(93.9)	342	0.948	18(4.0)	436(96.0)	454	0.336	0.877
Loss of Appetite	5(3.0)	160(97.0)	165	0.086	3(1.6)	185(98.4)	188	0.166*	0.013

Painful Sexual Intercourse	14(5.2)	257(94.8)	271	0.273	14(3.9)	347(96.1)	361	0.603	0.136
Others									
What are Source of Treatment of STIs									
Hospital	41(6.7)	569(93.3)	610	0.788	26(4.0)	619(96.0)	645	-	0.812
Traditional Doctor	13(7.2)	168(92.8)	181	0.816	9(4.5)	191(95.5)	200	-	0.509
Friends	1(5.0)	19(95.0)	20	0.660	2(13.3)	13(86.7)	15	0.696	0.903
Drug Store/Pharmacy	22(6.9)	295(93.1)	317	0.349	12(3.4)	343(96.6)	355	-	0.129
Relative	1(6.7)	14(93.3)	15	0.696	1(4.2)	23(95.8)	24	0.835	0.412
Others									
What can be Done to Avoid Sexually Transmitted Infections									
Abstain From Sexual Intercourse	40(6.1)	620(93.9)	660	0.008	30(4.1)	701(95.9)	731	0.423	0.042
Have Only One Partner at a Time	34(6.3)	504(93.7)	538	0.643	28(4.4)	605(95.6)	633	0.981	0.547
Use Condom	41(6.8)	566(93.2)	607	0.887	29(4.3)	645(95.7)	674	0.701	0.945
Use Antibiotics	17(12.1)	123(87.9)	140	0.005	5(5.3)	89(94.7)	94	0.470	0.003
Rinsing the Vagina/Penis	15(11.7)	113(88.3)	128	0.014	7(8.0)	81(92.0)	88	0.064	0.001
Immediately After Sexual Intercourse									
By Praying	11(9.9)	100(90.1)	111	0.140	6(6.9)	81(93.1)	87	0.137	0.028
Others									
Which Method for Prevention of HIV/AIDS Do You Know									
Don't Know Any Method	3(6.8)	41(93.2)	44	0.354	1(2.9)	34(97.1)	35	0.229*	0.074
Know One Method	3(3.3)	89(96.7)	92		0(0.0)	75(100.0)	75		
Know Two Methods	9(9.9)	82(90.1)	91		5(6.1)	77(93.9)	82		
Know All Three Methods	29(6.64)	408(93.4)	437		22(4.0)	527(96.0)	549		
Do You Know Someone living with the Virus that Causes HIV or AIDS									
Yes	24(7.5)	295(92.5)	319	0.320	19(4.6)	398(95.4)	417	0.449	0.298
No	22(5.7)	366(94.3)	388		12(3.5)	334(96.5)	346		
Do You Know Someone Died of AIDS									
Yes	20(6.0)	315(94.0)	335	0.577	20(4.2)	451(95.8)	471	0.745	0.597
No	26(7.0)	345(93.0)	371		11(3.8)	281(96.2)	292		
Is it possible that a Healthy Looking									

Person Has the Virus that Caused AIDS									
Yes	29(5.5)	496(94.5)	525	0.091	22(3.7)	569(96.3)	591	0.337	0.046
No	16(9.1)	159(90.9)	175		9(5.4)	158(94.6)	167		

* Fischer's exact

4.10 Sexual and Reproductive Health Behaviors

In urban area: out of school youths who had sexual intercourse in their life 38 (7.0%) were HIV infected compared to 508 (93.0%) that were not HIV infection with insignificant p-value of 0.372. In rural area: out of school youths who had sexual intercourse in their life 29 (4.6%) were HIV infected compared to 600 (95.4%) that were not HIV infected with insignificant p-value of 0.105.

Among out of school youths that were sexually active in the urban area: 31 (7.6%) were HIV infected and 379 (92.4%) were not HIV infected with a p-value of 0.235; and among out of school youths that were sexually active in the rural area: 25 (5.0%) were HIV infected and 477 (95.0%) were not HIV infected with a p-value of 0.121. The overall p-value for those that were sexually active in both rural and urban areas with respect to HIV infection was 0.086 (not statistically significant).

In urban area, among out of school youths that ever had sexual intercourse in the last 12 months, 32 (7.0%) were HIV infected and 423(93.0%) were not HIV infected with a non-statistically significant p-value of 0.588. In rural area, among out of school youths that had ever had sexual intercourse in the last 12 months, 27(4.8%) were HIV infected and 563(95.2%) were not HIV infected with a non-statistically significant p-value of 0.316.

The mean age at sexual debut or first sexual intercourse among out of school youths that were HIV infected who lived in rural area was 16.5±2.2years compared with those that were HIV infected in urban area 15.1±3.3years with a p-value of 0.0879.

Among out of school youths that had sex in exchange for money in urban area 4(4.7%) were HIV infected and 82(95.3%) were not HIV infected with a p-value of 0.443 and among out of school

youths that had sex in exchange for money in rural area 11 (9.5%) were HIV infected and 105(90.5%) were not HIV infected with a statistical significance of 0.003.

Among out of school youths that had been forced or coerced for sex, urban HIV infected were 4(7.4%) p-value 0.811 whereas rural HIV infected were 6(12.2%) with a p-value of 0.047. Among out of school youths that had ever been assaulted or raped in the past, those that were HIV infected in the urban area were 5(15.6%) with a p-value of 0.120 whereas those that were HIV infected in the rural area were 7(18.4%) with a p-value of 0.001.

Among out of school youths that had ever used a male condom, 32(6.9%) were HIV infected in the urban area with a p-value of 0.756 and 23(4.5%) were HIV infected in the rural area with a p-value of 0.439. Among out of school youths that used female condom, 6(6.3%) were HIV infected in the urban area with a p-value of 0.388 and 4(7.1%) were HIV infected in rural area with a p-value of 0.508.

Among out of school youths that used condom in last sex with spouse/cohabiting partner, 13(9.0%) were HIV infected in urban area (p-value: 0.046) and 5(4.3%) were HIV infected in rural area with a p-value of 0.694. Those that used condom last sex with their boy/girlfriend, 18(4.9%) were HIV infected in urban area (p-value: 0.496) and in rural area was 21(4.8%) with a p-value of 0.389. Those that used condom in last sex with a commercial sex worker, 1(2.3%) were HIV infected in the urban area with a p-value of 0.448 and 6(17.7%) were HIV infected in rural area with a p-value of <0.001. Among out of school youths that used condom in the last sex with a casual partner, 3(4.9%) were HIV infected in the urban area with a p-value of 0.872 and 5(6.3%) were HIV infected in the rural area with a p-value of 0.293.

Consistent condom use was assessed among out of school youths. Among those that always used condom, 6(6.2%) were HIV infected in the urban area and 6(4.2%) were HIV infected in the rural area and among those that never used condom, 13(5.8%) were HIV infected in the urban area and 6(2.8%) were HIV infected in the rural area.

Table 4.10: Sexual and Reproductive Health Behavior

Characteristics	Urban				Rural				Overall p-value
	HIV+ N(%)	HIV- N(%)	Total N	P-value	HIV+ N(%)	HIV- N(%)	Total N(%)	P-value	
Have You Ever Had Sexual Intercourse in Your Life									
Yes	38(7.0)	506(93.0)	544	0.372	29(4.6)	600(95.4)	629	0.105*	0.120
No	8(5.0)	152(95.0)	160		2(1.5)	129(98.5)	131		
Are You Sexually Active									
Yes	31(7.6)	379(92.4)	410	0.235	25(5.0)	477(95.0)	502	0.121*	0.086
No	11(5.1)	206(94.9)	217		4(2.2)	174(97.8)	178		
Have You Ever Had Sexual Intercourse in Last 12 Months Prior to this Survey									
Yes	32(7.0)	423(93.0)	455	0.586	27(4.8)	563(95.2)	563	0.182*	0.316
No	9(5.8)	147(94.2)	156		2(1.9)	103(98.1)	105		
When was The Last Time You Had Sexual Intercourse									
Never Had Sexual Intercourse	4(5.2)	73(94.8)	77	0.741*	-	49(100.0)	49	-	0.754
Had Sex (mean days)	2.5±1.5	3.5±4.3		0.316	2.4±1.1	3.1±3.1		0.446	0.223
Had Sex (mean weeks)	3.0±1.7	2.1±1.1		0.058	2.2±1.5	1.9±1.6		0.616	0.183
Had Sex (mean months)	3.5±3.0	3.8±3.1		0.804	3.4±.5	3.4±3.1		0.978	0.934
Had Sex (mean years)	2.5±1.2	2.8±3.1		0.804	4.0±1.4	3.1±2.7		0.640	0.950
How Old Were You When You First Had Sexual intercourse									
Mean years	15.1±3.3	16.2±2.7		0.021	16.5±2.2	16.4±2.8		0.854	0.088
Never Had Sexual Intercourse	0(0.0)	53(100.0)	53	0.001	-	27(100.0)	27	-	0.016
Number of people with sexual intercourse in the last 12months									
Never had sex	4(3.5)	110(96.5)	114	0.558*	0(0.0)	77(100.0)	77	0.233	0.281
1 Person	18(8.3)	199(91.7)	217		9(4.1)	212(95.9)	221		
2 Persons	7(7.0)	93(93.0)	100		7(5.0)	133(95.0)	140		

3-5Persons	6(6.6)	85(93.4)	91		4(3.7)	104(96.3)	108		
> 5Persons	4(5.4)	70(94.6)	74		7(6.9)	94(93.1)	101		
Sex in Exchange For Money									
Yes	4(4.7)	82(95.3)	86	0.443*	11(9.5)	105(90.5)	116	0.003	0.169
No	36(6.9)	489(93.1)	525		18(3.3)	529(96.7)	547		
Ever Been Force/Coerced into Having Sexual Intercourse									
Yes	4(7.4)	50(92.6)	54	0.811*	6(12.2)	43(87.8)	49	0.047	0.277
No	15(8.4)	163(91.6)	178		7(4.4)	152(95.6)	159		
Ever been Assaulted or Raped in the Past									
Yes	5(15.6)	27(84.4)	32	0.120	7(18.4)	31(81.6)	38	0.001	0.001
No	14(7.3)	177(92.7)	191		5(3.4)	144(96.6)	149		
Have You or Your Partner Ever Used a Male Condom Before									
Yes	32(6.9)	433(93.1)	465	0.756*	23(4.5)	487(95.5)	510	0.439*	0.657
No	10(5.6)	168(94.4)	178		7(3.7)	185(96.3)	192		
Don't know	2(9.1)	20(90.9)	22		0(0.0)	31(100.0)	31		
Used a Female/partner used a female condom with you									
Yes	6(6.3)	89(93.7)	95	0.388*	4(7.1)	52(92.9)	56	0.508*	0.557
No	33(6.3)	491(93.7)	524		24(3.9)	586(96.1)	610		
Don't know	4(12.5)	28(87.5)	32		2(3.7)	52(96.3)	54		
When was the last time you used a female male /partner used a female condom with you									
Mean (months)	2.3±1.0	4.6±5.4		0.378	17.5±29.7	9.6±18.5		0.4413	0.497
How long you started using male condom for the first time									
Mean months	14.1±13.7	23.6±24.3		0.308	31.0±34.4	29.1±19.8		0.839	0.374
What is the Main Reason Why You Using Male Condoms									
To Protect Against HIV/STIs	2(1.6)	123(98.4)	125	0.075*	4(3.2)	121(96.8)	125	0.751*	0.118
To Prevent	3(8.1)	34(91.9)	37		2(5.9)	32(94.1)	34		

Unwanted Pregnancy									
To Protect Yourself From Both HIV/STIs and Unwanted Pregnancy	25(8.4)	271(91.6)	296		17(4.5)	361(95.5)	378		
Others	1(8.3)	11(91.7)	12		0(0.0)	13(100.0)	13		
Did You Use Condom During Your Last Sexual Intercourse									
Never had Sexual Intercourse	6(4.7)	123(95.3)	129	0.365	1(1.0)	97(99.0)	98	0.231	0.183
Yes	15(6.0)	237(94.0)	252		16(4.9)	313(95.1)	329		
No	22(8.1)	248(91.9)	270		13(4.6)	267(95.4)	280		
If You have Ever had Sex, With Whom Did You Use Condom in Your Last Sexual Experience									
Spouse or Cohabiting Partner									
Yes	13(9.0)	132(91.0)	145	0.046	5(4.3)	110(95.7)	115	0.694	0.050
No	16(4.4)	347(95.6)	363		15(3.6)	406(96.4)	421		
Boy/Girlfriend									
Yes	18(4.9)	350(95.1)	368	0.496	21(4.8)	414(95.2)	435	0.389	0.964
No	13(6.2)	196(93.8)	209		5(3.2)	152(96.8)	157		
Commercial Sex Workers									
Yes	1(2.3)	43(97.7)	44	0.448*	6(17.7)	28(82.3)	34	<0.001	0.047
No	21(4.8)	419(95.2)			16(3.5)	444(96.5)	460		
Casual Partner									
Yes	3(4.9)	58(95.1)	61	0.872*	5(6.3)	74(93.7)	79	0.293	0.389
No	19(4.5)	407(95.5)	426		15(3.7)	386(96.3)	401		
Have You Ever Had Sex With a Casual Partner									
Yes	6(4.7)	121(95.3)	127	0.291	7(4.2)	158(95.8)	165	0.849	0.439
No	38(7.4)	478(92.6)	516		21(3.9)	516(96.1)	537		
How Many Times Have You Had Sex With a casual partner in the last 3 months									
Mean	2.8±2.1	2.9±2.4		0.945	3.0±1.8	3.0±2.8		0.994	0.950

Have You Ever Had Sex With a Female Sex Worker									
Yes	5(6.5)	72(93.5)	77	0.708	5(6.2)	75(93.8)	80	0.113	0.174
No	17(5.4)	298(94.6)	315		11(2.8)	388(97.2)	399		
How Many Times Have You Had Sex With a female Sex Worker in the Last 3 Month									
Mean	3.0±2.2	2.7±1.6		0.685	7.8±5.1	3.6±3.3		0.022	0.024
How Often did You use Condom During Sexual Intercourse in the Last 12 Month									
Never	13(5.8)	210(94.2)	223	0.819*	6(2.8)	212(97.2)	218	0.402*	0.377
Sometimes	19(7.4)	239(92.6)	258		16(5.6)	272(94.4)	288		
Often	2(4.2)	46(95.8)	48		1(2.2)	45(97.8)	46		
Always	6(6.2)	90(93.8)	96		6(4.2)	136(95.8)	142		
With whom Do You Always Use a Condom									
Spouse or Cohabiting Partner	13(9.6)	122(90.4)	135	0.965	7(8.4)	76(91.6)	83	0.668	0.947
Boy/Girlfriend	17(5.0)	323(95.0)	340	0.368	18(4.0)	438(96.0)	456	0.650	0.425
Commercial Sex Workers	4(6.1)	61(93.9)	65	0.680*	7(10.9)	57(89.1)	64	-	0.971
Casual Partner	3(3.5)	83(96.5)	86	0.196*	6(5.3)	107(94.7)	113	-	0.251
What was the Age Difference									
Less Than 5 Years Younger	8(5.8)	129(94.2)	137	0.591*	1(0.4)	223(99.6)	224	<0.001*	0.012
5 years or more years Younger	3(7.3)	38(92.7)	41		2(4.7)	41(95.3)	43		
About the Same Age	3(3.4)	84(96.6)	87		7(6.9)	95(93.1)	102		
Less Than 10 Years Older	10(8.4)	109(91.6)	119		12(8.6)	127(91.4)	139		
10 or More Years Older	6(10.9)	49(89.1)	55		0(0.0)	31(100.0)	31		
Don't Know the Difference	7(7.8)	83(92.2)	90		7(12.5)	49(87.5)	56		
How Many Sexual Partner Do You Currently Have Including Casual And Commercial Partners									
Spouse or	1.5±1.1	1.6±1.0		0.800	1.6±0.8	1.4±0.8		0.389	0.709

Cohabiting Partners (mean)									
Commercial Sex Workers (mean)	1.3±0.5	1.8±1.3		0.364	1.8±1.3	1.9±1.7		0.861	0.514
Casual Partners (mean)	2.7±1.5	2.1±1.4		0.349	4.2±2.7	2.2±1.5		<0.001	<0.001
Condom Effectively Protect Against Pregnancy									
Yes	39(6.8)	534(93.2)	573	0.506*	30(4.5)	642(95.5)	672	0.126*	0.145
No	2(3.6)	54(96.4)	56		0(0.0)	34(100.0)	34		
Condom Effectively Protect Against HIV Infection									
Yes	37(6.8)	510(93.2)	547	0.381*	27(4.2)	612(95.8)	639	0.256*	0.652
No	2(2.7)	71(97.3)	73		3(5.0)	57(95.0)	60		
Condom Can Disappear Inside Woman's Body									
Yes	3(4.6)	63(95.4)	66	0.680*	5(6.2)	75(93.8)	80	0.487	0.951
No	26(6.2)	395(93.8)	421		19(4.0)	460(96.0)	479		
Condom Effectively Protect Against STIs									
Yes	35(6.8)	481(93.2)	516	0.597*	28(4.5)	597(95.5)	625	0.176*	0.222
No	4(5.0)	76(95.0)	80		2(3.8)	51(96.2)	53		
Condom Can Be Used More than Once									
Yes	1(1.6)	61(98.4)	62	0.236	6(12.5)	42(87.5)	48	0.004	0.562
No	34(7.3)	431(92.7)	465		21(3.9)	524(96.1)	545		
Condom Can Be Purchase From Pharmacy, Clinic, or Hospital									
Yes	39(6.4)	573(93.6)	612	0.949	30(4.4)	650(95.6)	680	0.175*	0.692
No	1(8.3)	11(91.7)	12		0(0.0)	15(100.0)	15		
Condom Reduces Sexual Enjoyment									
Yes	25(6.6)	352(93.4)	377	0.414*	23(5.1)	431(94.9)	454	0.130*	0.397
No	2(2.9)	66(97.1)	68		3(3.6)	81(96.4)	84		
Do You Agree or Disagree that Male Condoms are Easy to Obtain									
Yes	32(6.1)	494(93.9)	526	0.610*	25(4.1)	590(95.9)	615	0.143*	0.431
No	2(8.3)	22(91.7)	24		3(9.4)	29(90.6)	32		

Do You Agree or Disagree that Male Condoms Break Often During Sexual Intercourse									
Yes	23(5.2)	421(94.8)	444	0.237	25(4.9)	489(95.1)	514	0.172*	0.846
No	5(8.3)	55(91.7)	60		2(2.0)	97(98.0)	99		
Would You Say Male Condoms are Affordable									
Yes	29(5.6)	487(94.4)	516	0.539*	25(4.4)	549(95.6)	574	0.487*	0.958
No	1(5.0)	19(95.0)	20		1(3.7)	26(96.3)	27		
Don't Know	12(8.0)	137(92.0)	149		3(2.2)	136(97.8)	139		
Suppose You wanted to Buy a Male Condom and Some People Were in the Store, Would you									
Wait and buy it Some Other Time	14(9.7)	131(90.3)	145	0.248	3(2.4)	122(97.6)	125	0.560*	0.720
Try to Hide the Fact that You Were Buying Condom	8(7.1)	105(92.9)	113		7(4.5)	150(95.5)	157		
Buy the Condom without Hiding	21(5.6)	356(94.4)	377		19(4.5)	400(95.5)	419		
Reason Why you Stop using Male Condom									
Did not enjoy Using Condoms	12(7.1)	158(92.9)	170	0.251*	12(6.2)	182(93.8)	194	0.289*	0.695
Wanted a Child	5(5.3)	89(94.7)	94		6(7.1)	78(92.9)	84		
Partner Opposed	7(11.1)	56(88.9)	63		3(3.8)	77(96.2)	80		
Religious Reason	1(2.9)	33(97.1)	34		0(0.0)	33(100.0)	33		
Others	5(14.7)	29(85.3)	34		0(0.0)	46(100.0)	46		

* Fischer's exact

4.11 HIV Associated Risk Factors

Among out of school youths that ever smoked cigarettes, those that were HIV infected in urban area were 7(4.9%) and in rural area were 12(5.9%) with a p-value of 0.869. Among those that were currently smoking cigarettes, 5(5.3%) out of school youths were HIV infected in the urban area and 10(9.1%) were HIV infected in the rural area with a p-value of 0.730.

Among out of school youths that tried alcohol in urban area, 18(5.4%) were HIV infected and 20(4.7%) were HIV infected in the rural area with a p-value of 0.704. Similarly, among those that had alcohol every day in the last 30days prior to the study, 2(3.3%) were HIV infected in urban area and 6(7.3%) were HIV infected in rural area. Out of school youths that never had alcohol in the last 30days, 11(6.2%) were HIV infected in the urban area and 2(1.7%) in the rural area were HIV infected.

Among out of school youths that smoked marijuana in urban area, 5(8.2%) were HIV infected and 7(10.4%) were HIV infected in rural area with a p-value 0.008. Also, among out of school youths that used cocaine in urban area 2(14.3%) were HIV infected and 3(17.7%) were HIV infected in rural area with a p-value of 0.003. Among out of school youths that used heroin in urban area 2(18.2%) were HIV infected and 2(13.3%) were HIV infected in rural area with a p-value of 0.010. Also, among out of school youths that injected cocaine/heroin using syringe 3(13.0%) were HIV infected in the urban area and 1(3.3%) were HIV infected in the rural area with a p-value of 0.303. Out of school youths that did not believe early sexual exposures encourage the risk of STI, 5(13.2%) were HIV infected in urban area and 3(6.7%) were infected in the rural area with a p-value of 0.159. Among out of school youths that were circumcised, 22(5.5%) were HIV infected in the urban area and 16(3.2%) were HIV infected in the rural area with a p-value of 0.364.

Among out of school youths that engaged in oral sex, 13(7.0%) were HIV infected in the urban area compared with 12(7.0%) in rural area with a p-value of 0.092. Among out of school youths that engaged in anal sex 9(9.8%) were HIV infected in urban area and 7(7.4%) were HIV infected in the rural area with a statistically significant p-value of 0.030. Among out of school youths that had ever been tested for HIV, 21(5.7%) were HIV infected compared to 25(7.3%) that were HIV infected among those that had never been tested for HIV in the urban area (p-value 0.375); while among those that had ever been tested for HIV in rural area, 17(4.1%) were HIV infected compared to 14(4.0%) among those that had never been tested for HIV (p-value 0.936). Similarly, among out of school youths that knew places to get tested, 32(6.6%) were HIV infected in urban area compared with 23(3.9%) that were HIV infected in the rural area with a p-value of 0.700.

Table 4.11: HIV Associated Risk Factors

Characteristics	Urban				Rural				Overall p-value
	HIV+ N(%)	HIV- N(%)	Total N	P-value	HIV+ N(%)	HIV- N(%)	Total N(%)	P-value	
Have you ever smoked cigarettes									
Yes	7(4.9)	135(95.1)	142	0.376	12(5.9)	192(94.1)	204	0.144	0.869
No	39(7.0)	519(93.0)	558		19(3.5)	525(96.5)	544		
Do you currently smoke cigarettes									
Yes	5(5.3)	90(94.7)	95	0.523	10(9.1)	100(90.9)	110	0.115	0.730
No	33(7.1)	434(92.9)	467		17(3.7)	446(96.3)	463		
How old were you when you first smoked for the first time									
Mean years	13.5±6.9	14.3±6.4		0.697	16.6±4.1	16.1±4.5		0.909	0.644
How many days did you smoke in the past 30 days									
Never smoked	17(6.5)	246(93.5)	263	0.741*	7(4.0)	166(96.0)	173	0.582*	0.634
Did not smoke in the last 30 days	3(7.9)	35(92.1)	38		2(2.6)	74(97.4)	76		
Mean days	14.7±13.1	21.0±11.9	301	0.371	15.8±11.1	19.1±12.4	249	0.598	0.321
In the past 24 hours, how many cigarettes did you smoke									
Mean number	4.4±2.4	6.1±5.1		0.412	6.3±5.5	5.3±5.2		0.652	0.811
Other types of tobacco currently smoked apart from cigarette									
Pipe									
Yes	2(8.0)	23(92.0)	25	0.606*	3(10.3)	26(89.7)	29	0.066*	0.113
No	29(5.6)	493(94.4)	522		19(3.6)	515(96.4)	534		
Chewing tobacco									
Yes	2(8.3)	22(91.7)	24	0.563*	3(8.8)	31(91.2)	34	0.143*	0.167
No	29(5.5)	494(94.5)	523		20(3.7)	516(96.3)	536		
Snuff									
Yes	3(5.3)	54(94.7)	57	0.866*	3(3.6)	81(96.4)	84	0.979*	0.805
No	29(5.8)	470(94.2)	499		18(3.6)	478(96.4)	496		
Have you tried taking alcohol									
Yes	18(5.4)	316(94.6)	334	0.321	20(4.7)	405(95.3)	425	0.380	0.704
No	25(7.2)	320(92.8)	345		10(3.4)	286(96.6)	296		
How old where you when you started taking alcohol									
Mean years	15.4±6.0	16.2±3.8		0.545	17±4.1	16.2±3.8		0.357	0.685

In the last 30days how many times did you have at least a drink of alcohol									
Never had a drink of alcohol	9(7.6)	110(92.4)	119	0.163*	2(1.8)	108(98.2)	110	0.229*	0.663
Did not have a drink in the last 30 days	2(2.7)	71(97.3)	73		5(4.7)	101(95.3)	106		
Mean days	3.6±3.2	10.3±11.0		0.024	14.2±11.6	9.2±10.4		0.092	0.633
In the last 30days how often have you had drinks containing alcohol									
Everyday	2(3.3)	58(96.7)	60	0.413*	6(7.3)	76(92.7)	82	0.157*	0.107
At least once a week	11(10.0)	99(90.0)	110		8(7.1)	105(92.9)	113		
Less than once a week	2(3.4)	56(96.6)	58		3(2.9)	102(97.1)	105		
Never	11(6.2)	167(93.8)	178		2(1.7)	118(98.3)	120		
Not sure	5(8.6)	53(91.4)	58		6(7.3)	76(92.7)	82		
No response	2(4.2)	46(95.8)	48		1(2.0)	49(98.0)	50		
How many bottles of alcohol do you take in a day									
Never had alcohol	14(7.5)	173(92.5)	187	0.474*	2(1.4)	139(98.6)	141	0.076*	0.869
Never had a drink of alcohol other than a few sips	3(4.8)	59(95.2)	62		5(5.5)	86(94.5)	91		
Mean number of bottles	1.7±0.9	2.7±2.3		0.108	3.5±3.2	2.6±2.2		0.110	0.891
In the last 30days, how many bottles of alcohol do you take in row									
Never had alcohol	17(8.0)	196(92.0)	213	0.319*	2(1.4)	141(98.6)	143	0.005*	0.423
Never taken more than one bottle in a row	3(4.4)	65(95.6)	68		9(8.9)	92(91.1)	101		
Mean number of bottles	3.5±2.7	3.9±4.5		0.769	5.0±4.5	5.0±14.0		0.999	0.890
During your lifetime how many time have you had hangover									
None	23(5.9)	370(94.2)	393	0.718*	13(3.6)	353(96.4)	366	0.107*	0.372
1 or 2 times	7(8.4)	76(91.6)	83		8(6.4)	117(93.6)	125		
3 to 9 times	3(9.4)	29(90.6)	32		2(3.7)	52(96.3)	54		
10 or more times	2(5.1)	37(94.9)	39		4(12.1)	29(87.9)	33		
During your life time how many times have you used drugs									
None	40(6.6)	562(93.4)	602	0.805*	22(3.3)	641(96.7)	663	0.015*	0.278
1 or 2 times	0(0.0)	12(100.0)	12		3(13.6)	19(86.4)	22		
3 to 9 times	3(8.1)	34(91.9)	37		4(10.8)	33(89.2)	37		
10 or more times	2(6.7)	28(93.3)	30		1(4.8)	20(95.2)	21		

Which have you tried									
Marijuana									
Yes	5(8.2)	56(91.8)	61	0.261	7(10.4)	60(89.6)	67	0.016	0.008
No	15(4.2)	342(95.8)	357		13(3.0)	414(97.0)	427		
No response	2(9.5)	19(90.5)	21		0(0.0)	1(100.0)	1		
Glue									
Yes	1(11.1)	8(88.9)	9	0.641*	1(25.0)	3(75.0)	4	0.052*	0.103
No	18(4.5)	386(95.5)	404		15(3.2)	454(96.8)	469		
No response	1(4.6)	21(95.4)	22		0(0.0)	3(100.0)	3		
Paint									
Yes	2(25.0)	6(75.0)	8	0.021*	1(25.0)	3(75.0)	4	0.054*	0.001
No	17(4.2)	387(95.8)	404		15(3.2)	452(96.8)	467		
No response	1(4.3)	22(95.7)	23		0(0.0)	2(100.0)	2		
Cocaine									
Yes	2(14.3)	12(85.7)	14	0.212*	3(17.7)	14(82.3)	17	0.009*	0.003
No	17(4.3)	378(95.7)	395		15(3.3)	444(96.7)	459		
No response	1(3.9)	25(96.1)	26		0(0.0)	2(100.0)	2		
Heroin									
Yes	2(18.2)	9(81.8)	11	0.076*	2(13.3)	13(86.7)	15	0.113*	0.010
No	16(4.0)	381(96.0)	397		15(3.2)	448(96.8)	463		
No response	1(3.7)	26(96.3)	27		0(0.0)	1(100.0)	1		
In the last 12 months have you injected cocaine or heroin using syringe									
Yes	3(13.0)	20(87.0)	23	0.179*	1(3.3)	29(96.7)	30	0.781*	0.303
No	22(5.1)	408(94.9)	430		23(4.2)	526(95.8)	549		
No response	3(9.7)	28(90.3)	31		2(6.7)	28(93.3)	30		
In the past 30 days, how often did your parents understand your problem									
Never	33(7.2)	428(92.8)	461	0.075*	16(3.7)	418(96.3)	434	0.151*	0.174
Rarely	7(14.3)	42(85.7)	49		4(6.6)	57(93.4)	61		
Sometimes	0(0.0)	40(100.0)	40		2(3.9)	49(96.1)	51		
Most of the time	0(0.0)	20(100.0)	20		4(13.3)	26(86.7)	30		
Always	1(7.1)	13(92.9)	14		1(5.3)	18(94.7)	19		
Youths should be encouraged to talk freely about their sex life									
Yes	31(6.1)	473(93.9)	504	0.419	24(4.6)	504(95.4)	528	0.272*	0.897
No	10(9.5)	95(90.5)	105		4(2.2)	179(97.8)	183		
Don't know	5(5.7)	83(94.3)	88		3(6.4)	44(93.6)	47		
Early sex exposures encourage the risk of STI									
Yes	38(6.5)	547(93.5)	585	0.175	26(3.9)	635(96.1)	661	0.664*	0.159
No	5(13.2)	33(86.8)	585		3(6.7)	42(93.3)	45		
Don't know	5(13.2)	33(86.8)	38		2(3.8)	51(96.2)	53		

Sex education should be taught only in the house									
Yes	12(4.9)	234(95.1)	246	0.411	11(4.1)	256(95.9)	267	0.991*	0.561
No	27(7.5)	331(92.5)	358		18(4.0)	428(96.0)	446		
Don't know	7(7.3)	89(92.7)	96		2(4.4)	43(95.6)	45		
Sex education goes against religious beliefs									
Yes	17(5.2)	308(94.8)	325	0.368	16(3.5)	439(96.5)	455	0.409	0.128
No	18(8.1)	203(91.9)	221		9(4.3)	200(95.7)	209		
Don't know	11(7.4)	137(92.6)	148		6(6.5)	86(93.5)	92		
Parents beliefs and values can help delay early sex									
Yes	32(6.5)	460(93.5)	492	0.874	22(3.6)	593(96.4)	615	0.233*	0.680
No	5(6.5)	72(93.5)	77		3(5.4)	52(94.6)	55		
Don't know	6(5.2)	109(94.8)	115		6(7.4)	75(92.6)	81		
Undue exposure to sexual practice from electronic media makes one to want sexual relationship									
Yes	29(5.6)	487(94.4)	516	0.036	24(3.7)	631(96.3)	655	0.010*	0.027
No	12(12.6)	83(87.4)	95		2(3.2)	60(96.8)	62		
Don't know	4(5.3)	71(94.7)	75		5(13.9)	31(86.1)	36		
Peer influence can approve one-night stand									
Yes	36(6.4)	524(93.6)	560	0.892	26(4.0)	623(96.0)	649	0.702	0.799
No	8(6.1)	123(93.9)	131		5(4.8)	99(95.2)	104		
Peers can transfer wrong information about sexual intercourse									
Yes	41(6.9)	552(93.1)	593	0.133*	26(3.9)	645(96.1)	671	0.366	0.576
No	3(3.0)	98(97.0)	101		5(6.0)	79(94.0)	84		
If you don't have sex before marriage, you are not mature									
Yes	19(5.5)	327(94.5)	346	0.425	21(4.4)	458(95.6)	479	0.619	0.588
No	24(7.0)	321(93.0)	345		10(3.6)	265(96.4)	275		
Are you circumcised									
Yes	22(5.5)	377(94.5)	399	0.886	16(3.2)	485(96.8)	501	0.294	0.364
No	12(5.8)	195(94.2)	207		9(4.9)	175(95.1)	184		
Have you ever had oral sex									
Yes	13(7.0)	172(93.0)	185	0.734	12(7.0)	160(93.0)	172	0.032	0.092
No	33(6.3)	490(93.7)	523		19(3.3)	562(96.7)	581		

Have you ever had anal sex before									
Yes	9(9.8)	83(90.2)	92	0.176	7(7.4)	87(92.6)	94	0.082	0.030
No	37(6.0)	575(94.0)	612		24(3.6)	635(96.4)	659		
Have you ever been tested for HIV before									
Yes	21(5.7)	347(94.3)	368	0.375	17(4.1)	395(95.9)	412	0.936	0.499
No	25(7.3)	315(92.7)	340		14(4.0)	335(96.0)	349		
Do you know places you can get tested									
Yes	32(6.6)	456(93.4)	488	0.900	23(3.9)	561(96.1)	584	0.700	0.746
No	14(6.3)	208(93.7)	222		8(4.6)	166(95.4)	174		
If you had an opportunity to be tested for HIV, would you be willing									
Yes	43(6.4)	632(93.6)	675	0.466*	31(4.1)	720(95.9)	751	0.534*	0.518
No	3(9.7)	28(90.3)	31		0(0.0)	9(100.0)	9		

* Fischer's exact

4.12 Multivariate Analysis with HIV prevalence as the Dependent Variable

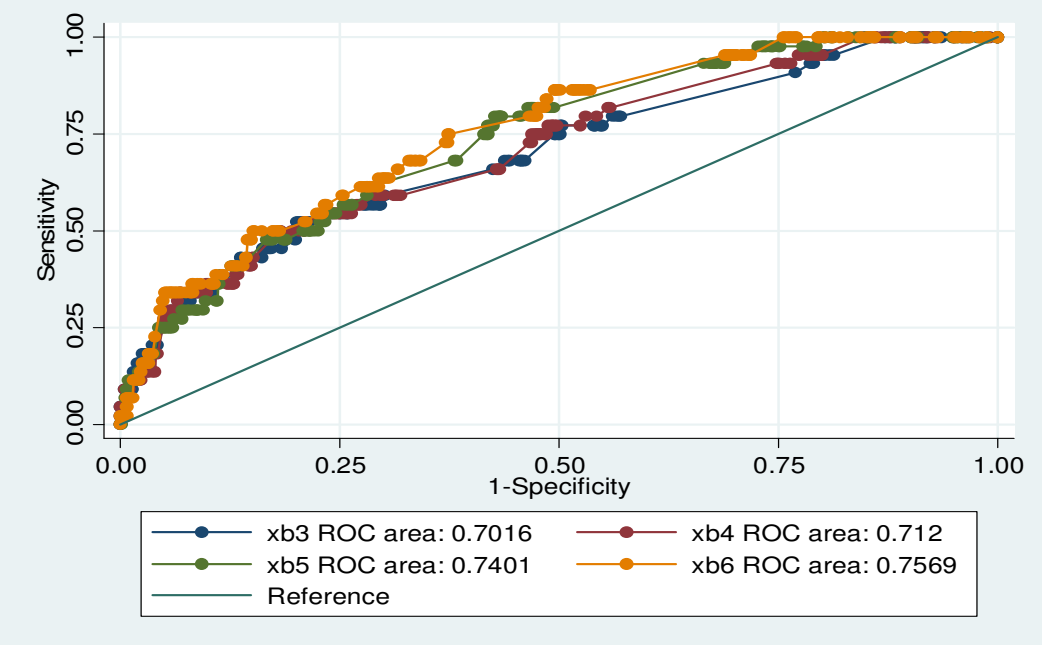
This is the result of multiple regression models that was done using predictor variables that were selected from previous sexual and reproductive health studies (a prior selection) making them fixed variables in the models, and also using variables that were significant at the level of significance of 0.2 from the bivariate analysis of this study. Additionally, split analysis was done to obtain male only model and female only model. Four selected criteria were used to select the best model or the most optimal model to report the predictors of HIV among out of school youths. Many models were built but the four best models were shown in table 4.12. This table shows that model four is the best based on the lowest AIC value of 336.46; lowest BIC value of 389.68, the highest ROC curve of 0.76 and the highest cases correctly classified of 95.38%

Table 4.12 Outcomes of AIC, BIC, ROC and Correctly Classified Cases

Table 4.12: Model Selection

	AIC	BIC	ROC Area	Cases Correctly Classified
Model 1	368.23	412.56	0.70	95.37%
Model 2	343.61	391.88	0.71	95.23%
Model 3	340.62	389.07	0.74	95.31%
Model 4	336.46	389.68	0.76	95.38%

Figure 4.18: Shows area under the curve in the ROC



The four curves are for the four models. The area under the curve for model four was 0.757 (xb6ROC) which is the largest in the ROC curve above.

4.13 Model 4 (the selected model) was made up of the following covariates

Model 4: the logistic equation (combined):

4. $log\left(\frac{p}{1-p}\right) =$
   $\beta_0 + \beta_1\,(\text{Sex}) - \beta_2\,(\text{Occupation}) - \beta_3\,(\text{Discharge}) + \beta_4\,(\text{Burning sensation}) -$
   $\beta_5\,(\text{Place of Residence}) + \beta_6\,(\text{Age Category}) - \beta_7\,(\text{Abstinence}) + \beta_8\,(\text{Antibiotics}) +$
   $\beta_9\,(\text{Sexually Active}) + \beta_{10}\,(\text{Anal Sex})$

4.14 Model Evaluation (Post Estimation)

4.14.1 Evaluation 1: Multicollinearity

Model 1 was subjected to multicollinearity check.

Table 4.13: Multicollinearity Check

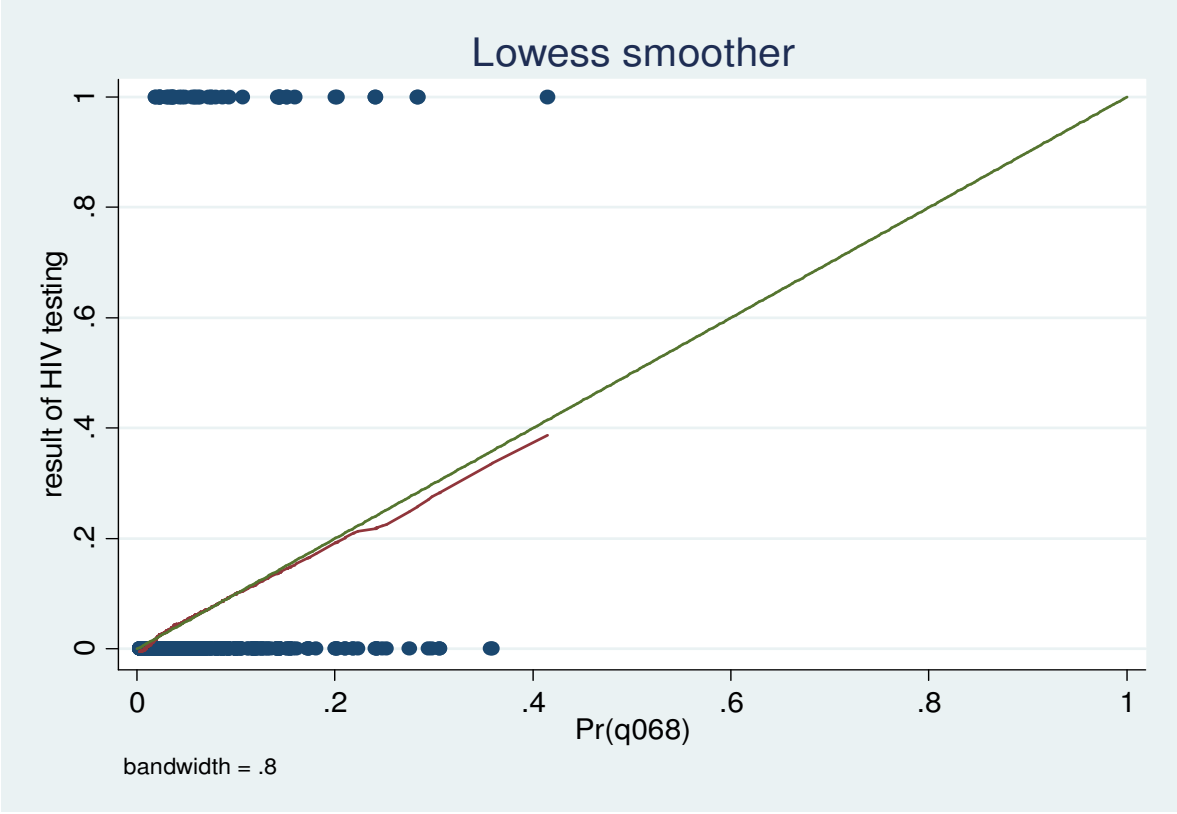
Variables	VIF	Tolerance
Sex	1.03	0.939
Occupation	1.15	0.870
Place of residence	1.05	0.956
Knowledge of discharge as STI symptoms	1.98	0.504
Knowledge of painful sensation	1.99	0.501
Practice of abstinence	1.03	0.974
Antibiotics for STI	1.03	0.969
Being sexually active	1.12	0.891
Practice of anal sex	1.02	0.977
Age category	1.17	0.856
	Mean VIF=**1.26**	

The tolerance values of all variables were ranged between 0.501 and 0.977 and the variance inflation factor (VIF) values of all variables were ranged between 1.02 and 1.99. Since the tolerance values are away from 0.1 and the VIF values are close to 1, there was no multicollinearity in the regression analysis for the selected model 1.(40),(41)

4.14.2 Evaluation 2: Assumption or Test for Linearity

Lowess graph was used to assess if the log odds of the outcome variable was linearly associated with the independent variables.(44) There was a fairly linear relationship between the outcome and independent variables. This is shown in figure 4:19 below. Despite the fair linearity, model 1 can still be used to evaluate predictors or to predict factors or drivers of HIV infection among out of school youths in North Central Nigeria.

Figure 4.19: Linear Assumption



4.14.3 Evaluation 3: Goodness of Fit Statistic

Hosmer-Lemeshow goodness of fit statistic was done using Stata statistical software. This gave a chi value of 5.25 and p-value of 0.365. This was not significant meaning that the model 4 fits the data well. There was no over fitting either. Thus, it is evident that model 4 has ability to predict HIV infection among out of school youths as the data points were well fitted in the model.(42)

4.14.4 Evaluation 4: Model Specification Test

Model specification was done using Stata statistical software. The linear predicted value (*_hat*) was significant with a p-value of 0.001 and linear predicted value squared (*_hatsq*) was not significant with a p-value of 0.213. This is an indication that the variables that were not meant to be in model 1 were not included. Secondly, the linktest that was done showed that the (*_hatsq*) in the model was not statistically significant; thus, model 4 was fully specified, no relevant variables that could have predictive power were omitted and the link function was correctly specified. All the relevant variables were included in model 1 and there was no specification error.

4.14.5 Evaluation 5: Ten-fold cross validation

Using the Stata statistical package, a ten-fold cross validation was done. This is a model validation technique to measure the performance of the predictors in the model and thereby assessing over fitting of the data. The initial area under the ROC curve was 0.757 and the 10-fold cross-validated area under the curve estimate was 0.755. The difference of 0.002 is small which shows that the predictors of HIV were not over-fitted, and they predicted the outcome well.

Table 4.14: Summary of Model Evaluation

Parameters	Model specification		Hosmer-Lemeshow goodness of fit statistic	10-fold Cross Validation
	_hat	*_hatsq*		
Chi Square *(χ^2)*			5.25	
Coefficient	1.274	0.0764		
P-value	0.001	0.213	0.365	
Cross-validated AUCs				0.755 and 95% CI (0.692 – 0.853)

AUC – Area under the curve

Multiple logistic regression was done with HIV prevalence as the outcome or dependent variables. The output of the model 1 logistic regression is shown in table 15 below with the odds ratio, p-value, confidence interval, semi-standardized coefficient and fully standardized coefficient.

Table 4.15: Output of Multiple Logistic Regression Models

Output of Multiple Logistic Regression (combined)

Variable (n=933)	Odds Ratio	P-value	Confidential Interval		bStdX	bStdXY	SDofX
			Lower	**Upper**			
Sex (RC=female)	1.65	0.155	0.83	3.30	0.217	0.105	0.431
****Age Category** (RC=15-19years)	2.66	0.045	1.08	7.21	0.414	0.201	0.424
Occupation (RC=unemployed)	0.79	0.519	0.39	1.61	-0.112	-0.054	0.479
Place of Residence (RC=urban)	0.66	0.199	0.34	1.25	-0.211	-0.102	0.498
****Knowledge of Discharge as STI symptom** (RC=no)	0.21	<0.001	0.09	0.48	-0.672	-0.325	0.434
Knowledge of burning sensation as an STI symptom (RC=no)	1.67	0.283	0.66	4.23	0.190	0.092	0.371
****Abstinence from sex** (RC=no)	0.24	0.020	0.07	0.80	-0.232	-0.112	0.162
Antibiotics (RC=no)	1.89	0.083	0.92	3.88	0.235	0.114	0.369
Sexually Active (RC=no)	2.34	0.068	0.94	5.88	0.383	0.185	0.448
****Anal Sex** (RC=no)	2.62	0.026	1.12	6.12	0.283	0.137	0.294

RC is the reference category **Significant variable

The significant predictors of HIV infection among out of school youths are as follows:

Knowledge of discharge as an STI symptom with OR = 0.21 and 95% CI (0.09 – 0.48) and a p-value of <0.001. Out of school youths that have knowledge of discharge as an STI symptom were more likely to be protected from HIV infection compared to their counterparts that do not know by 79%. With this p-value being less than 0.05 (that is <0.001), knowledge of discharge as an STI symptom was a significant predictor of HIV infection among the youths.

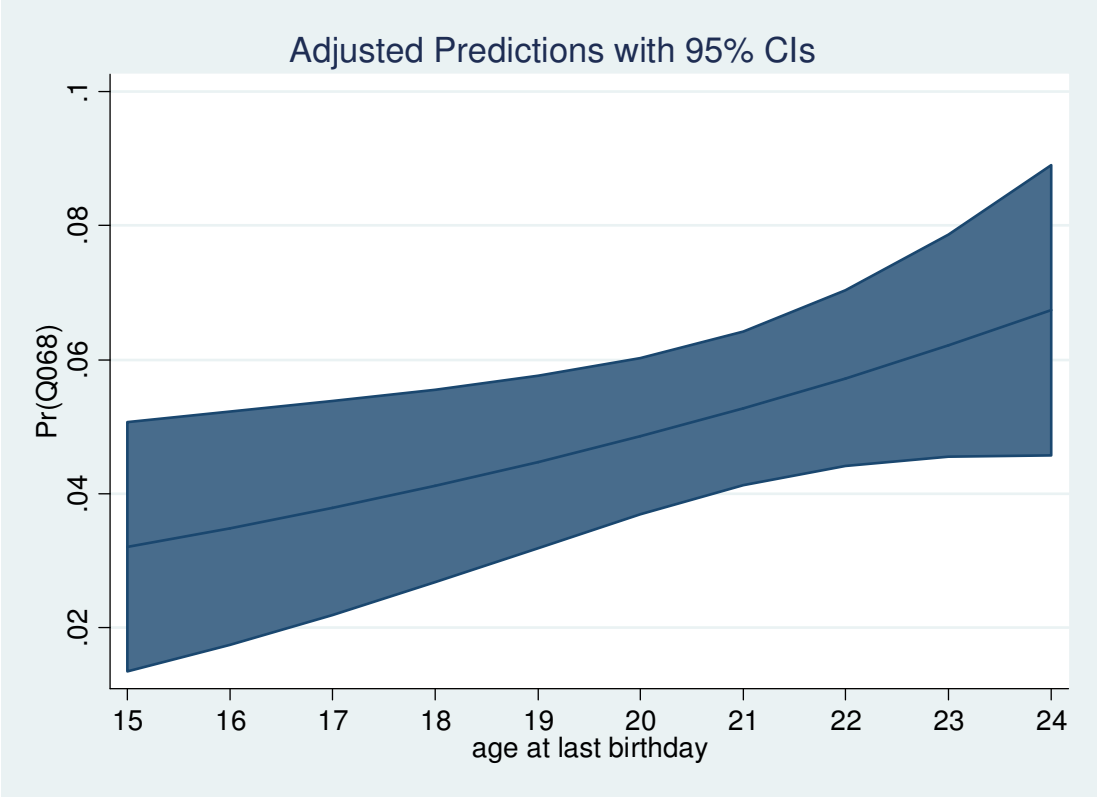
Abstinence with OR = 0.24 and 95% CI (0.07 – 0.80) and a p-value of 0.020. Out of school youths that practiced abstinence were more likely to be protected from HIV infection compared to their counterparts that do not practice abstinence by 76%. With this p-value being less than 0.05 (that is 0.020), practice of abstinence was a significant predictor of HIV infection among the youths.

Practice of anal sex: odds ratio (OR) was 2.62 and 95% confidence interval (CI) was 1.12 – 6.12 with p-value 0.026. This means that those that practiced anal sex were about three times more likely to become HIV infected compared to those that did. With the p-value being less than 0.05 (that is 0.026), practice of anal sex was a significant predictor of HIV infection among the out of school youths.

Out of school youths in age category 20 - 24 years: OR = 2.66 and 95% CI (1.08 – 7.21) and a p-value of 0.045. Out of school youths in age category 20 - 24 years were about three times more likely to be HIV infected compared to those aged 15 – 19years. With this p-value being less than 0.05 (that is 0.044), age category 20 - 24 years was a significant predictor of HIV infection among the youths.

In furtherance to the age category 20 – 24years being a predictor of HIV infection, predicted probabilities with their confidence band were done using Stata statistical package. In figure 28 below, the analysis showed that as age increases from age 15 to 24years, the predicted probabilities for being HIV infected among out of school youths have a monotonic increase. Thus, 24years of age has the highest probability of being HIV infected while 15years of age has the least probability. In the figure 28 below, the probability of HIV is on the y axis while age as at last birthday was on the x-axis.

Figure 4.20: Shows Age Relationships with HIV



Lastly, semi-standardized coefficient (bStdX) and fully standardized coefficient (bStdXY) were obtained to ascertain the strength of the predicting coefficients of the covariates and to know which variables were strong predictors of HIV infection. When semi-standardized or regression coefficients (bStdX) were undertaken, the coefficient of independent variables were transformed to standard deviation format while the coefficient of outcome variable (HIV infection) was maintained as it was in the unstandardized model. Unlike in bStdX, bStdXY is standardized or regression coefficient in which both the independent (covariates) and dependent (outcome) variables were transformed or represented in standard deviation format to assess the predictive strength of the independent variables.

Based on the absolute values of bStdX and bStdXY in table 4.15, variables in the order of their predictive strength (descending order) were: knowledge of discharge as an STI symptom, age category, being sexually active, anal sex, antibiotics, abstinence, sex, place of residence, knowledge of burning sensation as an STI symptom and occupation. This shows that the

strongest predictor of HIV among out of school youth was knowledge of discharge as an STI symptom followed by those that were aged 20 – 24years of age and being sexually active, while the least predictor was occupation.

Table 4.16: Output of Multiple Logistic Regression (Male only)

Variable (n= 529)	Odds Ratio	P-value	Confidential Interval	
			Lower	Upper
Age Category (RC=15-19years)	2.33	0.424	0.29	18.68
Occupation (RC=unemployed)	0.80	0.736	0.23	2.86
Place of Residence (RC=urban)	0.97	0.952	0.34	2.76
****Knowledge of Discharge as STI symptom** (RC=no)	0.22	0.017	0.06	0.77
Knowledge of burning sensation as an STI symptom (RC=no)	4.48	0.193	0.47	42.92
****Abstinence from sex** (RC=no)	0.08	0.007	0.01	0.50
Antibiotics (RC=no)	0.99	0.992	0.21	4.75
Anal Sex (RC=no)	1.47	0.653	0.27	8.03
Sex with FSW (RC=no)	2.29	0.160	0.72	7.27
Condom use in last sex with FSW (RC=no)	0.32	0.326	0.03	3.07

**Significant variable and RC is reference category

Model Equation for Male Only:

$$log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1\,(\text{Male circumcision}) - \beta_2\,(\text{Occupation}) - \beta_3\,(\text{Discharge}) + \beta_4\,(\text{Burning sensation}) - \beta_5\,(\text{Place of Residence}) + \beta_6\,(\text{Age Category}) - \beta_7\,(\text{Abstinence}) - \beta_8\,(\text{Antibiotics}) + \beta_9\,(\text{Sexually Active}) + \beta_{10}\,(\text{Anal Sex}) + \beta_{11}\,(\text{Sex with FSW}) - \beta_{12}\,(\text{Condom use with FSW})$$

Knowledge of discharge as an STI symptom with OR = 0.22 and 95% CI (0.06 – 0.77) and a p-value of 0.017. Male out of school youths that have knowledge of discharge as an STI symptom were more likely to be protected from HIV infection compared to their counterparts that did not know by 78%. With this p-value being less than 0.05 (that is 0.017), knowledge of discharge as an STI symptom was a significant predictor of HIV infection among the male youths.

Abstinence with OR = 0.08 and 95% CI (0.01 – 0.50) and a p-value of 0.007. Male out of school youths that practiced abstinence were more likely to be protected from HIV infection compared to their counterparts that did not practice abstinence by 92%. With this p-value being less than 0.05 (that is 0.007), practice of abstinence was a significant predictor of HIV infection among the male youths.

Table 4:17 Output of Multiple Logistic Regression (female only)

Variable (n=382)	Odds Ratio	P-value	Confidential Interval	
			Lower	Upper
****Age Category** (RC=15-19years)	11.37	0.042	1.09	18.64
Occupation (RC=unemployed)	0.92	0.900	0.26	3.28
Place of Residence (RC=urban)	1.77	0.371	0.51	6.15
Knowledge of Discharge as STI symptom (RC=no)	0.34	0.231	0.06	1.99
Knowledge of burning sensation as an STI symptom (RC=no)	0.40	0.336	0.06	2.60
Abstinence from sex (RC=no)	1.01	0.993	0.05	20.28
Antibiotics (RC=no)	0.37	0.270	0.06	2.18
Sexually Active (RC=no)	1.14	0.861	0.25	5.21
Anal Sex (RC=no)	0.61	0.673	0.06	6.11
Sex in Exchange for Money (RC=no)	1.32	0.693	0.33	5.19
****Sexually assaulted/raped** (RC=no)	7.75	0.002	2.06	29.20

**Significant variable and RC is reference category

Model Equation for Female Only:

$$log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1\,(\text{Sex for money}) - \beta_2\,(\text{Occupation}) - \beta_3\,(\text{Discharge}) - \beta_4\,(\text{Burning sensation}) + \beta_5\,(\text{Place of Residence}) + \beta_6\,(\text{Age Category}) + \beta_7\,(\text{Abstinence}) - \beta_8\,(\text{Antibiotics}) + \beta_9\,(\text{Sexually Active}) + \beta_{10}\,(\text{Anal Sex}) + \beta_{11}\,(\text{Raped})$$

Female out of school youths in age category 20 - 24 years: OR = 11.37 and 95% CI (1.09 – 18.64) and a p-value of 0.042. Female out of school youths in age category 20 - 24 years were about 11 times more likely to be HIV infected compared to those aged 15 – 19years. With this p-value being less than 0.05 (that is 0.042), age category 20 - 24 years was a significant predictor of HIV infection among the female youths.

Sexually assaulted or raped in the past with OR = 7.75 and 95% CI (2.06 - 29.20) and p-value of 0.002. This means that female youths that were sexually assaulted or raped were about eight times more likely to be HIV infected compared to those that were not sexually assaulted or raped. With this p-value being less than 0.05 (that is 0.002) sexually assaulted or raped in the past was a significant predictor of HIV infection among the female out of school youths.

Table 4.18 Output of Multiple Logistic Regression with 12 Interaction Terms

Variable (n=933)	Odds Ratio	P-value	Confidential Interval	
			Lower	Upper
Sex (RC=female)	1.22	0.920	0.02	62.56
Age Category (RC=15-19years)	0.07	0.342	0.01	18.06
Occupation (RC=unemployed)	0.77	0.480	0.37	1.60
Place of Residence (RC=urban)	<0.01	0.987	-	-
Knowledge of Discharge as STI symptom (RC=no)	0.49	0.732	0.01	29.66
Knowledge of burning sensation as an STI symptom (RC=no)	2.33	0.116	0.81	6.68
Abstinence from sex (RC=no)	<0.01	0.986	-	-

Antibiotics (RC=no)	1.57	0.287	0.68	3.63
Sexually Active (RC=no)	2.40	0.072	0.93	6.25
Anal Sex (RC=no)	0.86	0.967	0.01	109.20
Sex.discharge	0.83	0.801	0.19	3.55
Place of residence.discharge	1.47	0.608	0.34	6.33
State.discharge	0.41	0.278	0.08	2.03
Sex.age category	2.94	0.380	0.26	32.85
Place of residence.age category	3.26	0.339	0.29	36.67
State.age category	1.60	0.613	0.26	9.94
Sex.abstinence	0.71	0.843	0.02	21.01
Place of residence.abstinence	<0.01	0.988	-	-
State.abstinence	1.71	0.573	0.27	10.96
Sex.anal sex	0.32	0.395	0.02	4.34
Place of residence.anal sex	0.85	0.884	0.10	7.11
State.anal sex	4.48	0.251	0.35	58.01

The AIC and BIC values of the model with interaction terms were 548.11 and 659.39 respectively.

There was no significant predictor of HIV infection in the model with the interaction terms. Thus, no effect modification among significant variables from initial model such as age category, anal sex, knowledge of discharge and abstinence, and variables such as sex, state and place of residence.

Chapter Five

5.0 Discussion

This study has assessed and provided information on the following objectives: baseline estimate for HIV prevalence among out-of-school youths; sexual and reproductive health indicators among out-of-school youths; the difference in HIV associated risk factors between urban and rural out-of-school youths; and predictors of HIV infection among out-of-school youths.

More out of school youths were within the age group 20 – 24years in both urban and rural areas compared to those in age group 15 – 19years. The age group 20 – 24years is a critical one as they will soon become young adults. Specific programs are needed to address HIV prevention among the youths since this study has shown that the risk of HIV infection increases with age. Appropriate and age-specific interventions are needed among out of school youths. The mean age of out of school in this study was 20.6±2.7years and is comparable to the mean age of out of school youths in the study conducted by Negeri in Eastern Ethiopia.(30) Furthermore, the out of school youths in this study were found to engage in risky sexual behaviors such as early sexual debut, poor or inconsistent condom use and having multiple sex partners which was similar to the study conducted in Ilu-Abba-Bora Zone, Western Ethiopia.(45) The implication of this finding is that there may be increased risk for HIV and STI among out of school youths in the future in both rural and urban areas.

5.0.1 Baseline Estimate on HIV prevalence among out of school youths:

In this study, HIV prevalence among out of school youths in North Central Nigeria was 5.2% which is more than the Nigerian national average of 3.4%(7) in the general population. In 2012 NARHS, a population-based survey, HIV prevalence among youth aged 15 – 24years in Nigeria was 3.0%. Also, from the same NARHS study, HIV prevalence among youths aged 15 – 24years in the North Central Nigeria was 3.6%.(7) In this study, urban and rural HIV prevalence was 6.5% and 4.1% respectively whereas in NARHS urban and rural HIV prevalence among those aged 15 – 24years was 3.0% and 3.9% respectively. Although NARHS study was not directed at assessing HIV prevalence among out of school youths but the general population unlike this

study that was conducted only among out of school youths in North Central Nigeria. This shows that out of school youths are more at risk of HIV than youths in general and this may be due to limited or neglect in HIV programming among OOSY.

Additionally, previous surveys in Nigeria have considered some groups as most at risk populations (MARP) such as Female Sex Workers, Men that have Sex with Men, Injecting Drug Users, Transport Workers, Police and Armed Forces. They were previously chosen as most at risk populations because they had higher HIV prevalence than the general population. The national MARP studies have so far been conducted twice in 2007 and 2010. The more recent survey conducted in 2010 had the following findings: Female Sex Workers have HIV prevalence of 24.4%; Men that have Sex with Men have HIV prevalence of 17.2%; Injecting Drug Users have HIV prevalence of 4.2%, Transport Workers have HIV prevalence of 2.4%, Police have HIV prevalence of 2.6% and Armed Forces have HIV prevalence of 2.5%.(46) Apart from the Female Sex Workers and Men that have Sex with Men in this national survey that had higher HIV prevalence, the rest of the four risk groups had lower HIV prevalence compared to out of school youths in this study. This study has shown that since HIV prevalence of out of school youths is higher than the national average, they are potential most at risk population. Thus, there is a need to have a national out of school youths study in Nigeria to confirm this finding, and to consider the possibility of including out of school youths as one of the most at risk populations in national studies. Evidence from this study has shown that out of school youths needs urgent, stakeholder driven, well targeted and elaborate HIV prevention programs, given that their HIV prevalence is above national average. In the area of HIV testing, this study has a lower HIV testing refusal rate of 7.8% unlike the 2012 NARHS study that had a 24.5% refusal rate in the general population and 23.4% refusal rate in North Central Nigeria among the youths aged 15 – 24years. Higher response rate from this study makes it less prone to bias in estimating HIV prevalence unlike the 2012 NARHS national survey.

In this study, HIV prevalence among male was 5.8% compared to their female counterparts 7.6% in the urban area whereas in the rural area HIV prevalence among male was 3.1% compared to their female counterparts 6.0%. In both urban and rural areas of North Central Nigeria, male HIV prevalence was 4.3% and female HIV prevalence was 6.8% with a statistical significant

difference of 0.038. When this study was compared with 2012 NARHS, among male youths HIV prevalence was 3.2% and female 4.1% with a statistical significant p-value of 0.030. Both studies have shown that there is feminization of HIV among youths in Nigeria as females are more likely to be HIV infected. This may be due to biological, socio-economic and sexual aggression against female youths. Thus, females should be given priority in HIV prevention and control programs. Stakeholders need to deliberate on cost-effective strategies that can assist Government, non-governmental organizations, communities and donor agencies to reduce the burden of HIV infection among female youths in a gender sensitive and gender friendly manner.

Out of school youths that lived with their cohabiting partners in the urban area have a higher risk of HIV infection (15.1%) compared to those that lived with their parents in both urban and rural areas. Additionally, out of school youths in marital relationship in both urban area (6.6%) and rural area (4.8%) have higher risk of HIV infection compared to their single counterparts. This calls for opportunity to start and sustain couple or partner testing among out of school youths in Nigeria.

HIV prevalence is related to socio-economic status. Out of school youths from households with low socio-economic status have higher risk of HIV infection compared to their counterparts from households with high socio-economic status. Similarly, those that earned lower incomes in both urban and rural areas had higher HIV prevalence. This may be due to poor economic status leading to sex for money and youths associating with peers that exert bad influences on them. Thus, the need for economic empowerment among out of school youths is vital to HIV/AIDS control program. Influencing structural and biological components of HIV prevention is not enough; there is a need for stakeholders to incorporate economic interventions that will empower youths against risk of HIV infection. Similarly, when HIV prevalence was compared with socio-economic status in rural and urban areas, this study showed that among urban out of school youths, HIV prevalence decreases with socio-economic status. Those with higher socio-economic status had the lower prevalence. Low socio-economic status had a prevalence of 7.0%, middle had a prevalence of 5.0% and high had a prevalence of 3.0%. Likewise, in rural area, HIV prevalence decreases with socio-economic status. Low socio-economic status had a prevalence of 6.4%, middle had a prevalence of 4.5% and high had a prevalence of 1.7%.

5.0.2 Sexual and reproductive health indicators among out-of-school youths:

In this study, risk perception of contracting STI/HIV was very high among out of school youths. About 76.6% believed they were at risk of contracting HIV with 77.8% in urban and 75.8% in rural area. This is much higher than other studies conducted in Africa with risk perception of 2.2% among in-school youths in Tanzania(47) and 54.3% among out of school youths in Ethiopia.(30)

About 40.4% of out of school youths had two or more sexual partners in the last 12months with 36.2% in the urban area and 44.3% in the rural area. This is consistent with the study from Ethiopia of about 32.6%.(30)

Out of school youths who had sex in exchange for money were 13.4% of which 11.6% were from the urban area and 15.3% were from the rural area. Similarly, among those who had sex in exchange for money, 4.7% were HIV infected in the urban area and 9.5% were HIV infected in the rural area. Poor financial status has the potential of leading to increased risk for HIV due to multiple sexual relationships. Alternate income generation strategies are needed especially among out of school females that engage in sex for money. Job creation among out of school youths is important in long term HIV control and intervention programs.

In this study, the mean age at sexual debut was 16.2±2.8years; this figure is slightly lower than the study conducted in Ethiopia with a mean age at sexual debut of 18.7±3.4years.(30) Out of school youths in North Central Nigeria may be more influenced to experiment sex in their early lives due to societal pressures and which may increase their risk for HIV.

More than two thirds of out of school youths had sexual intercourse in their life 79.0%, with 75.9% in urban area and 81.8% in rural area. Whereas almost two third were sexually active 61.4%, with 57.3% in urban area and 65.3% in rural area. These were out of school youths that had sexual intercourse in the last three months prior to the study. Rural out of school youths were more sexually active compared to their urban counterpart. Additionally, among those that were sexually active in urban area, HIV prevalence was 7.6% compared to 5.1% that were not sexually active (although it was not statistically significant) while in the rural area HIV

prevalence was 5.0% among the sexually active OOSY and 2.3% among those that were not sexually active and also not statistically significant. The percentage of out of school youths that abstained from sex was 30% which is consistent with the finding of about 30% in a study among female out of school youths in Oyo State, South west Nigeria.(48) In contrast, 41.4% out of school youth had sexual intercourse in Ethiopia.(30) and 54% had sex in a study conducted in Tanzania.(49) Out of school youths may be more sexually active in Nigeria compared to Tanzania and Ethiopia due to neglect in HIV prevention programming to increase in the practice abstinence as a form of HIV prevention.

In urban area, out of school youths that were forced or coerced for sex had HIV prevalence of 7.6% and those that were not forced for sex had HIV prevalence of 6.3% with a p-value of 0.651 whereas in rural area, out of school youths that were forced or coerced for sex had HIV prevalence of 6.8% and those that were not forced for sex had HIV prevalence of 3.9% with a p-value of 0.191. Also, among out of school youths in the urban area that have ever been assaulted or raped in the past, those that were HIV infected were 13.5% compared to those that were not raped with HIV prevalence of 6.6% and a p-value of 0.126 whereas in rural area, those that were raped had HIV prevalence of 17.0% compared to those that were not raped with a prevalence of 4.6% and a p-value of 0.002. In both urban and rural areas, HIV prevalence is significantly associated with being raped with a p-value of 0.001 which may be due to communal conflicts and lack of protection for female youths. Community education against rape with improved community security is important in HIV/AIDS prevention and control program.

In this study, consistent condom use among out of school youths was low 15.9% with 13.3% in urban area and 18.4% in rural area unlike in Ethiopian studies that had consistent condom use of 42.7% (30) and 37%(8). Also, condom use with female sex workers was low 8.5% with 8.8% in urban area and 8.2% in rural area. Condom use was also low in sexual relationship with casual partners 13.3% with 11.6% in urban area and 14.8% in rural area. However, it was highest in sexual relationship with boyfriend/girlfriend which was 52.0% with 46.0% in urban area and 57.5% in rural area. Limited condom use may be due to poor availability and affordability of condoms, and information about its use. Condom promotion campaign is crucial to HIV prevention among out of school youths. There is a need to increase the uptake of condom use

among out of school youths. Youths need to be educated on proper and consistent use of condom in order to record meaningful HIV control achievements in North Central Nigeria.

Besides, there is a need to promote ABC of HIV prevention, where "A" is abstinence, "B" is be faithful and "C" is condom use. Out of school youths that knew the three methods of prevention against HIV in a spontaneous response without prompting were 65.3% with 59.7% in urban area and 70.4% in rural area. Those that were HIV infected among those that knew the three methods were 6.6% in urban area and 4.0% in rural area. There was no significant association between knowing the three methods and HIV prevalence (p-value 0.074). It is not enough to know the methods but to practice the use of the prevention methods against acquiring HIV infection.
Interestingly, out of school youths were asked about these prevention methods against sexually transmitted infections (STIs) one after the other. Out of school youths that had knowledge of prevention methods of STIs including those that knew that abstinence from sexual intercourse is a prevention method was 93.9% with urban area 92.5% and rural area 95.2%. Those that knew being faithfully to one partner as an STI prevention method were 78.1% with urban area 74.3% and rural area 78.1% while those that knew use of condom as a prevention method were 85.4% with urban area 83.8% and rural area 86.9%. Importantly, those that knew abstinence, be faithful and condom use as ways to avoid STIs were higher than those that gave spontaneous response to knowing "ABC" methods as ways of preventing HIV/AIDS. Investment in HIV/STI prevention knowledge is crucial to keeping out of school youths safe from STIs including HIV. Efforts from stakeholders should be geared towards substantial investment in knowledge about HIV/STI prevention methods among this vulnerable population.

Out of school that knew someone that died of AIDS were 53.9% of which 46.4% were from the urban area and 60.8% from the rural area. In the urban area, among those that knew someone died of HIV, their HIV prevalence was 6.0% in urban area and 4.2% were HIV infected in rural area. There was no significant association between knowing someone died of HIV and HIV prevalence in both rural and urban area with a p-value of 0.597. Despite the fact that there was no significant association, there is a need for out of school youths to be aware of mortality and morbidity associated with HIV infection towards cautious and safe sex practices.

The proportion of out of school youths that believed that it is possible for a healthy looking person to have HIV was 73.9% of which 71.8% were from the urban area and 75.9% were from the rural area. In urban area, among out of school youths that believed HIV infected person can look healthy, 5.5% were HIV infected compared with those that did not believe with an HIV prevalence of 9.1%, which is not statistically significant (p-value 0.091). In rural area, among those that believed HIV infected person can look healthy, 3.7% were HIV infected compared with those that did not believe with HIV prevalence of 5.4% which was not statistically significant with a p-value of 0.337. However, in both rural and urban areas, the belief that a healthy person can have HIV was significantly associated with HIV prevalence with a p-value of 0.046. There is usually an erroneous belief that once someone is HIV infected and the person will be emaciated and is not possible to look healthy. Hence, there is a need to promote less risky sexually behaviors among out of school youths given that a healthy looking person can have HIV. Comprehensive knowledge is vital to HIV prevention among out of school youths.

About 84.1% of out of school youths knew hospital as the source of treatment of sexually transmitted infections (STIs), of which 84.9% were from urban area and 83.4% from rural area. While those that knew drug store as source of treatment were 45.9% of which 44.9% were from urban area and 46.9% were from rural area. Since STIs can predispose to HIV, knowledge of source of treatment of STIs is important to good management of STI to prevent HIV acquisition. Also, it will promote health seeking behaviors among the youths.

Out of school youths were quite knowledgeable about HIV transmission through “blood transfusion”, “sexual intercourse” and “sharing of sharp objects or instruments”. Out of school youths that knew blood transfusion as a means of transmitting HIV were 87.1% of which 84.8% were from the urban area and 89.3% from the rural area. Among those that knew about blood transmission 6.4% were HIV infected in urban area and 3.9% were HIV infected in rural area. Out of school youths that knew sexual intercourse as a means of transmitting HIV were 94.1% of which 92.9% were from the urban area and 95.3% from the rural area. Among those that knew about sexual intercourse 6.5% were HIV infected in urban area and 4.2% were HIV infected in rural area. Out of school youths that knew sharing of sharp objects or instruments as a means of transmitting HIV were 89.4% of which 86.9% were from the urban area and 91.7% from the rural area. Among those that knew about sharing of sharp objects or instruments 6.4% were HIV

infected in urban area and 4.2% were HIV infected in rural area. Overall, knowledge of mode of HIV transmission was not significantly associated with HIV prevalence. Despite the fact that knowledge of transmission was not associated with HIV prevalence, there is a need for knowledge of transmission to be combined with knowledge of prevention in comprehensive HIV prevention package among the out of school youths. It is important to ensure their knowledge of HIV is increased and maintained.

Out of school youths that believed HIV can be cured were 17.8% of which 19.0% were from the urban area and 16.7% from the rural area. Of those that believed HIV can be cured, 10.6% were HIV infected in the urban area and 2.3% infected in the rural area. There was no significant association between this belief and HIV prevalence with a p-value of 0.231. Knowledge that there is no cure for HIV should serve as deterrence against HIV among out of school youths.

Out of school youths that knew genital discharge as a symptom of STI were 49.2% of which 42.5% were from the urban area and 55.4% were from the rural area. Among those that knew genital discharge as a symptom of STI, 3.6% were HIV infected in urban area and 3.4% were HIV infected in rural area. There was a significant association between this knowledge and HIV prevalence with a p-value of 0.013. Also, out of school youths that knew burning pain in urination as a symptom of STI were 61.6% of which 55.5% knew in urban area and 67.2% knew in rural area. Among out of school youths that knew burning pain in urination as a symptom of STI, 5.3% were HIV infected in urban area and 3.4% were HIV infected in rural area. There was no significant association between burning pain in urination and HIV prevalence (p-value of 0.113).

Out of school youths that knew genital ulcer or sores as a symptom of STI were 49.3% of which 43.3% knew in urban area and 54.8% knew in rural area. Among out of school youths that knew genital ulcer or sores as a symptom of STI in men, 4.4% were HIV infected in urban area and 3.4% were HIV infected in rural area. There was no significant association between knowledge of genital ulcer and HIV prevalence (p-value of 0.066). However, out of school youths that knew lower abdominal pain as a symptom of STI in women were 51.4% of which 46.0% were from urban area and 56.3% were from rural area. Among out of school youths that knew lower abdominal pain as a symptom of STI in women, 5.3% were HIV infected in the urban area and

3.1% were HIV infected in the rural area. There was an association between HIV prevalence and knowledge of lower abdominal pain in women with a p-value of 0.033. Also, out of school youths that knew genital discharge as a symptom of STI in women were 49.3% of which 43.8% were from the urban area and 54.4% were from the rural area. Among out of school youths that knew genital discharge as a symptom of STI in women, 6.4% were HIV infected in urban area and 3.1% were HIV infected in the rural area, and there was no association between genital discharge and HIV prevalence with a p-value of 0.784. Out of school youths that knew foul smelling discharge as a symptom of STI in women were 49.1% of which 44.2% were from urban area and 53.7% were from rural area. Among out of school youths that knew foul smelling discharge as a symptom of STI in women, 5.9% were HIV infected in urban area and 3.8% were HIV infected in the rural area. There was no significant association between foul smelling discharge as a symptom of STI in women and HIV prevalence with a p-value of 0.953. Thus, investments to make out of school youths have knowledge of STI symptoms in men and women will go a long way in HIV prevention among them in North Central Nigeria. Youth friendly STI centers should have health promotion units to enhance knowledge of STI symptoms among out of school youths through health education in the center and through outreach programs in both rural and urban communities.

5.0.3 Associated HIV risk factors between urban and rural out-of-school youths:

About a quarter of out of school youths had ever smoked, of which about 13.6% currently smoked. Those in urban area that ever smoked were 19.6% and those in rural area that ever smoked were 26.2% while those that currently smoked in urban area were 13.2% and in rural area those that currently smoked were 14.3%. Moreover, in the urban area 5.3% of those that currently smoked were HIV infected and 7.1% of those that did not currently smoke were HIV infected unlike in the rural area that those that currently smoked had HIV prevalence of 9.1% compared to those that did not currently smoke with a prevalence of 3.7%. There was not association between smoking and HIV prevalence among the out of school youths. The proportion of smokers among them is low which is of good public health advantage.

About 9.3% of out of school youths took alcohol everyday with 8.1% in urban area and 10.4% in rural area of which 3.3% were HIV infected in urban area and 7.3% were HIV infected in rural

area. Alcohol was not a significantly associated with HIV prevalence in this study unlike in the study conducted in Ethiopia where alcohol was significantly associated with HIV infection.(50)

Out of school youths that tried marijuana were 8.6% of which 8.7% were from the urban area and 8.5% from rural area. Among those that tried marijuana in urban area, 8.2% were HIV infected and among those that did not try marijuana, 4.2% were HIV infected. In urban area, marijuana use was not associated with HIV prevalence (p-value of 0.261). Unlike the rural area, among those that tried marijuana 10.4% were HIV infected and those that did not try marijuana 3.0% were HIV infected. In rural area, HIV prevalence was associated with marijuana use with a p-value of 0.016. Also, out of school youths that tried cocaine were 2.2% of which 2.4% were from the urban area and 2.3% from rural area. Among those that tried cocaine in urban area, 14.3% were HIV infected and among those that did not try cocaine 4.3% were HIV infected. In urban area, cocaine use was not associated with HIV prevalence (p-value of 0.212). Unlike the rural area, among those that tried cocaine 17.7% were HIV infected and those that did not try cocaine 3.3% were HIV infected. In rural area, HIV prevalence was associated with cocaine use with a p-value of 0.009. Additionally, in both urban and rural areas, cocaine use was significantly associated with HIV infection with a p-value of 0.003. This shows that drug use plays key role in HIV infection in rural area due to growing of the weeds used for these drugs. Out of school youths that tried heroin were 1.9% of which 2.0% were from the urban area and 1.9% from rural area. Among those that tried heroin in urban area, 18.2% were HIV infected and among those that did not try heroin, 4.0% were HIV infected. In urban area, heroin use was not associated with HIV prevalence (p-value of 0.076). Unlike in the rural area, among those that tried heroin, 13.3% were HIV infected and those that did not try heroin 3.2% were HIV infected. In rural area, HIV prevalence was not associated with heroin use with a p-value of 0.113. Overall, heroin use in both urban and rural areas was associated with HIV infection with a p-value of 0.010. Drug use among out of school youth is associated with HIV and it is consistent with the study from Ethiopia.(50) Drug use may inhibit self-control and may promote risky sexual behaviors. HIV prevention package among out of school youths should include control of drugs; and education of the out of school youths on the danger of using drugs and its relationship with HIV/AIDS. Health education to reduce the use of hard drugs (marijuana, cocaine and heroin) is important in HIV prevention intervention package among out of school youths.

Similarly, among the out of school youths that injected cocaine or heroin, 13.0% were HIV infected in urban area and 3.3% were HIV infected in the rural area. Interestingly, injected drug use was not significantly associated with HIV prevalence among out of school youths (p-value 0.303) unlike the oral or sniffing administration of hard drugs in this study that was significantly associated with HIV infection.

Among out of school youths that had anal sex in urban area, 9.8% were HIV infected and 7.4% were HIV infected in the rural area. There was a significant association between HIV prevalence and anal sex with a p-value of 0.030 that is consistent with the findings from an African study on the role of anal intercourse in the epidemiology of AIDS.(51) Unprotected anal sex predisposes to STI including HIV. There was no statistical association between oral sex and HIV infection (p-value 0.092). HIV prevalence among out of school youths that engaged in oral sex was 7.0% each in urban and rural areas. Thus, HIV interventions should include limiting HIV transmission through anal sex among out of school youths.

Moreover, out of school youths that believed that peer influence can approve one night stand were 80.6%, urban area youths that had this belief of peer influence were 77.5% and rural area youths that had this belief of peer influence were 83.4%. Among those that believed that peer influence can approve one night stand, 6.4% were HIV infected in urban area and 4.0% were HIV infected in rural area. There was no association between this peer influence belief and HIV prevalence with a p-value of 0.799. Similarly, out of school youths that believed that peers can transfer wrong information about sexual intercourse were 84.8% with 82.3% in urban area and 87.0% in rural area. Among those that believed that peers can transfer wrong information about sexual intercourse, 6.9% were HIV infected in urban area and while in rural area, 3.9% were HIV infected. Although peer influence is not statistically associated with HIV infection, but there is a need to include peer education and support in the holistic HIV prevention program among out of school youths. Peer education should not only be for in-school youths, strategies to employ the use of peer educators among out of school youths are important in meaningful HIV prevention programs. Peer education should be occupation specific as the characteristics of out of school youths may diver by their location or occupation. This may necessitate location or

occupation specific peer education programs for meaningful use of peer education methods among out of school youths. This will also include developing role models among the peers.

Recently, Nigerian Government has been promoting universal HIV testing to allow majority of Nigerians to be tested. About 53.0% out of school youths were previously tested for HIV of which 51.6% were from urban area and 54.2% were from rural area. Of those that were previously tested in urban area 5.7% were HIV infected and 4.1% were HIV infected in rural area. Although there was no statistical difference or association between previous HIV testing and current HIV status or prevalence; however, there is a need for routine or voluntary HIV testing among out of school youths as this will create awareness about HIV risk and encourage those that are not infected to maintain their negative status. The primary health care centers and hospitals run by non-governmental organizations should create youth-friendly HIV testing units, and ensure that confidentiality and post-test counseling are employed to gain the confidence of youths in seeking HIV testing services. Also, there is a need for demand creation of HIV testing services among out of school youths. This can be done by HIV prevention stakeholders working with various artisan associations that the out of school youths are directly or indirectly involved. Partnership should be formed with the Associations that these out of school youths belong to in meaningful HIV prevention efforts in Nigeria.

Knowledge of places to get tested for HIV is vital to meaningful prevention and control programs. Out of school youths need to be aware of where to be tested for HIV. About 71.6% of out of school youths that knew where to get tested for HIV of which 67.2% were from the urban area and 75.7% were from the rural area. Among those that knew where to be tested for HIV, 6.6% were HIV infected in urban area and 3.9% were HIV infected in the rural area. HIV prevention stakeholders need to work with artisan associations and give them lists of available HIV testing and treatment centers in their locality. Promotion of places where HIV testing can be done is crucial in service utilization and is a vital component HIV testing demand creation.

5.0.4 Predictors of HIV infection among out-of-school youths

From the multiple logistic regression analysis, the significant predictors of HIV in the combined model were: age group 20-24 years with OR = 2.66 and 95% CI 1.08–7.21; unprotected anal sex OR 2.62 and 95% CI 1.12–6.12; knowledge of discharge as an STI symptom OR 0.21 and 95%

CI 0.09 – 0.48; and abstinence OR 0.24 and 95% CI 0.07 – 0.80. In male only model, they were: knowledge of discharge as STI symptom with OR 0.22 and 95% CI 0.06-0.77; and abstinence from sex with OR 0.08 and 95% CI 0.01-0.50. In female only model, female out of school youths with age category 20-24years OR 11.37 and 95%CI 1.09-18.64; and sexually assaulted/raped OR 7.75 and 95% CI 2.06-29.20.

Out of school youths that were aged 20 – 24years were about three times more likely to be HIV infected in the combined model and about 11 times in the female only model. Also, the risk of HIV infection increases with age among the out of school youths. Increase in age may be directly related to increased risky sexual behaviors. Timely and evidence based age-specific interventions are needed for these youths. Elaborate and impact oriented prevention efforts should be targeted at youths that are 20 years and above. National Agency for the Control of AIDS (NACA) in Nigeria needs to develop appropriate youth-friendly, age and gender specific prevention interventions among out of school youths. Hence, NACA's primary focus of HIV prevention methods should be directed to out of school youths that are aged 20 – 24years. Stakeholders need to create appropriate HIV prevention strategies among them. As a matter of fact, comprehensive HIV prevention package needs to be broken by age and sex in meaningful HIV prevention efforts among out of school youths in Nigeria.

Unprotected anal sex predisposes out of school youths to HIV by about three times. Previous studies have shown that unprotected anal sex has a high risk for HIV transmission due to the anatomy of the anus and ulcerations that may result from sex.(51)(52),(53) There is a need to appropriate and comprehensive sexual education among out of school youths.

Knowledge of discharge as an STI symptom was protective by about 79% in the combined model and was protective by about 78% in male only model. There is a need to promote STI knowledge and prevention among out of school youths. Health education and promotion on STI knowledge is important in long term HIV prevention efforts. Propagation or dissemination of STI knowledge will involve using out of school youths most preferred sources of information such as Radio/TV, movies/documentaries and handbills. Additionally, there is a need to scale-up

and sustain youth-friendly STI management centers in Nigeria with a key emphasis on STI education.

Abstinence was a protective factor against HIV by about 76% in the combined model and by about 92% in male only model. This study reinforces the importance of abstinence as a powerful tool in the prevention and control of HIV especially among the male youths, and it corroborates the importance of abstinence as identified by previous studies such as Sangowawa et al and Trenholm et al.(48),(54)

Lastly, female out of school youths that were sexually assaulted including rape were about eight times more likely to be HIV infected. There is a need to set up community task force to offer protection especially for young women, and which is an important component of HIV prevention intervention. Also, there is a need to set up and scale up post exposure prophylaxis units in our primary health care centers in both rural and urban areas. Law guiding against rape or sexually assault should be enforced in our communities with education in mass media to deter against rape using radio/television, movies and handbills or posters. Law enforcement and community policing are vital against HIV spread through rape. Out of school youth women should be educated about the danger of rape or sexual assault and the need to avoid center places or areas at certain time of the day or night against becoming rape victim.

5.1 Strengths and Limitations

The strengths of this study were: it had a larger sample size of 1,600 compared to out of school youth studies examining risky sexual behaviors among the out of school youths such as Alemu et al with a sample size of 628(8), study conducted by Negeri(30) with a sample size of 600 among out of school youths, and study conducted by Sangowawa et al with a sample size of 143 respondents(48). Moreover, this study included both male and female, and rural and urban areas. The response rate for HIV testing was high at 92.2% in this study and was higher than that of the national NARHS study. Most importantly, the biological component involving HIV testing was strength in this study. From the literature searches and reviews of databases like PUBMED, POPLINE, scholar google and others that were done, there was no study published in any English speaking journal that involved or had HIV testing among out of school youths. The HIV

testing component together with information on sexual and reproductive health linked to the HIV testing makes this study unique, timely, important and informative for national and state level HIV programming. Evidence generated from this study will support coordinated and targeted HIV programming opportunities among out of school youths in Sub-Saharan Africa including Nigeria. Additionally, this study had good cooperation from Heads of Communities and Associations as a result of the pre-study advocacies, and there was stakeholders buy-in for the dissemination of the outcome of this study to aid their strategic programmatic direction.

The limitations of this study are: the study design was cross sectional and as such causality cannot be inferred. Secondly, there was differential inclusion as some homeless youths and orphans less than 18years could not be involved in the study due to informed consent and also, members of key populations such as transgender people and men that have sex with men could not be included due to Nigerian law prohibiting such practices as a criminal offence. Thirdly, social desirability bias cannot be ruled out in which out of school youths could have said what the interviewers were interested in hearing, and difficulty in locating out of school youths in some located since there was no formal structure in place and this prolonged the length and cost of data collection process. These limitations were overcome by reaching out to the artisan associations, community leaders and motor park chairmen, letting them and the out of school youths to know the importance of this study to national and sub-national HIV response in Nigeria. Pre-study advocacies were carried out severally prior to the study, and good community entry approaches especially working with local and traditional leaders, and head of artisan associations were employed. The study also circulated HIV anti-stigma and discrimination pamphlets prior to the data collection.

5.2 Policy Implication

This research project has generated article publication and interest nationally in National Agency for the Control of AIDS, the HIV/AIDS coordinating body in Nigeria. Similarly, technical and capacity supports are being offered to National Agency for the Control of AIDS in conducting research among out of school youths based on the experience from this study and in developing research questionnaire, and in designing monitoring and evaluation tools to routinely monitor programs directed to out of school youths at national, state and local government levels.

Likewise, the third revision of Nigerian HIV National Strategic Framework (NSF) will take place in 2015. NSF is a document that provides strategic policy framework or needs for HIV prevention, treatment and control in Nigeria. With government commitment targeted to youths especially out of school youths, the future revision of NSF will need evidences from this study to appropriately strengthen HIV programming among out of school youths in Nigeria. The emphasis on out of school youths will be supported by facts and current realities. Youth policy and programming with regards to HIV prevention will stand out in the revision of our NSF. Hence, the findings from this study will provide evidence to develop youth oriented policies. Also, the publication from this research will inform national response towards mitigating the impact of HIV infection among out-of-school youths as well as provide opportunities to address their sexual and reproductive health needs. It will enhance effective linkage of services in HIV and reproductive health among youths, and understand the drivers of the epidemic. Lastly, the information from this study will inform the design, implementation and evaluation of state level responses to HIV epidemic among youths in Nigeria.

Chapter Six

6.0 Conclusion and Recommendations

Out of school youths have higher HIV prevalence compared to national average of 3.0% among youths aged 15-24years. They engage in risky sexual behaviors. HIV prevention and control among out of school youths is of national and public health importance. Knowledge about HIV prevention methods and drivers of HIV epidemic among out-of-school youths are of strategic importance in the national and state HIV prevention programs. Inability to attend school should not be an obstacle to prevention of new infections among this group of youths. Since the risk of HIV increases with age, there is a need for age appropriate prevention methods to reduce new infections among out of school youths. Surprisingly, rural out of school youths have better knowledge of HIV transmission and prevention methods than their urban counterparts. However, rural out of school youths engaged more in risky sexual behavior compared to their urban counterparts. These risky sexual behaviors include being sexually active, multiple sexual partners, sex in exchange for money and use of alcohol. Despite engagement in risky sexual behaviors by the rural out of school youths, there was better condom use among them compared to their urban counterparts which might have led to lower HIV prevalence among rural out of school youths.

Also, since most of the out of school youths lived with their parents or guardian/relatives, involvement of these adults in HIV prevention programs that involve out of school youths may help improve HIV prevention programs among them. Parents or their guardians may assist in educating their children or youths at home against the dangers of HIV/AIDS, and talk to them about delaying sexual debut, safe sex and HIV prevention methods.

There is a need to formulate and strengthen policies based on evidence that will mitigate the impact of HIV among out of school youths. Similarly, since better HIV prevention opportunities exist in schools, there is a need to promote school enrolment among youths, make completion of secondary education to be compulsory; and there is a need to abolish payment of school fees in primary and secondary schools in Nigeria.

Strategies to promote increased uptake of condom use among out of school youths in non-marital relationships is of paramount importance, and there is a need to organize structures or programs that will be out-of-youth friendly to cater for their sexual and reproductive health needs, and provide life skill education.

Information, education and communication (IEC) materials targeted at HIV prevention among out of school youths should be developed. The emphases should be on making safe and healthy choices with respect to their sexual and reproductive needs, and behavioral change. Thus, focus on programs that will increase safe behavior is important.(55)

Likewise, there is a need to develop out of school HIV and reproductive health peer education training programs to create role models among them. This should be tailored towards reducing their risk of unsafe sex, and helping female youths with the ability to negotiate safe sex. They need appropriate role models of their own, and educational interventions need to be designed for these youths.(56) At the same time, their preferred sources of information for communicating HIV/AIDS prevention methods such as TV/radio and movies/documentaries should be utilized in delivering cost-effective and impact oriented prevention packages.

Additionally, there is a need to formulate impact-oriented age-specific interventions with well-targeted HIV prevention programs on STI knowledge, condom use and behavioral change. Further studies especially longitudinal studies are needed to understand the incidence of HIV among youths generally in Nigeria, and for causal inference with regards to risk factors and HIV infection. Also, further researches on the depth of high sexual and reproductive risk behaviors among out of school youths are needed.

Finally, HIV prevention among out-of-school youths should be a national priority and the need to reduce their risks of HIV infection. Efforts should be made to reach out to the out of school youths through proven and impact oriented national and sub-national programs in Nigeria. These programs are needed to stem HIV epidemic among them. Implementation of scalable and sustainable prevention packages that are cost effective is urgent needed in our resource limited setting.(57),(58)

Recommendations:

- **Individual Level**

- There is a need to develop out of school youth peer groups in rural and urban areas to promote their sexual and reproductive health needs.
- There is a need to promote health seeking behaviors through the provision of youth-friendly services and demand creation for condom use, and HIV counseling and testing services.
- Incentives for behavioral change could be initiated to promote safe behavior which is important in HIV prevention and control programs.
- There is a need to promote the ABC of prevention among the youths (abstinence, be faithful and condom use).

- **Community Level**

- Communities need to provide out of school youth oriented HIV testing and counseling services including provision of clinics, mobile services and distribution of condoms.
- Community policing is needed to protect women from sexual assaults or rape.
- Communities will need to promote the development and distributions of information education and community materials that address the sexual and reproductive health needs of out of school youths. These materials can be developed in Pidgin English and in local languages. The materials need to be age and gender specific.

- **Government Level**

- Government needs to provide more youth friendly health centers and ensure training of their staff to meet the needs of youths including the out of school youths in service provision. These centers will maintain confidentiality and provide services without stigma and discrimination. Out of school youths are not homogeneous group and there is a need to reach to all categories of out of school youths including homeless youths and members of key populations like injecting drug users.
- Integration of youth friendly HIV and sexual and reproductive health services into both primary and secondary health care delivery systems. Service integration is vital to sustainability of youth-centered programs.

- Health communication on HIV and STI prevention programs needs to be supported by Government. There is a need for comprehensive HIV education programs with STI knowledge and HIV prevention.
- Government needs to create employment opportunities and financial empowerment of OOSY especially among the female youths.
- There is a need to create public health policies and reinforce existing policies to improve HIV prevention methods, and sexual and reproductive health of out of school youths.
- Government needs to partner with Non-Government Organizations working among youths to learn from service provision to the youths in the past in designing new OOSY specific interventions.
- The newly incorporated President's Comprehensive Response Plan for HIV/AIDS in Nigeria needs to include out of school youths HIV prevention programs in its agenda especially age specific and female targeted programs.
- Adequate referral services that are youth friendly are needed to be in place in Nigeria.

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Declaration:

I declare and acknowledge that this project was conducted and coordinated by me; the writing, analysis and interpretations of the findings were done by me. In addition, the creation of geographic information system (GIS) maps was done by me. Also, there are no competing interests.

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